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This magazine is published to promote sound thought concerning industrial medicine and the surgery of trauma. To that end it will contain articles, news items, reports, digests, and other presentations, together with editors' comments. The editorial policy is to encourage frank discussion. On this basis contributions are invited. The editors will exercise care in checking on the accuracy of data printed but in all other respects articles and opinions of which expression is allowed are the opinions of their authors—the editors reserving in all cases the right to comment on the same in the current or any subsequent issues as they may be inclined.

Volume 21 AUGUST 1952 *Number 8*

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JOHN F. OSTERRITTER, M.D., has joined the staff of Industrial Hygiene Foundation as Assistant to the Medical Director for the next two years while working for his doctorate in industrial medicine at the Graduate School of Public Health, University of Pittsburgh. DR. OSTERRITTER graduated from the University of Pittsburgh School of Medicine in 1950, and received his Master's Degree in Public Health last month.

LEROY H. SLOAN, M.D., Clinical Professor, University of Illinois College of Medicine, was chosen President-Elect of the American College of Physicians at its meeting in Cleveland, April 25. DR. SLOAN, who graduated at Rush Medical college in 1917, has been a member of the faculty of the University of Illinois College of Medicine since 1936.

HARRY E. MOCK, JR., M.D., of Evanston, and WILLIAM G. HIBBS, M.D., of Chicago, have been elected to the Franklin (Indiana) College board of directors. DR. MOCK replaces his father, DR. HARRY E. MOCK, SR., who resigned after serving on the board for 22 years.

ROBERT COLLIER PAGE, M.D., F.A.C.P., Chairman, National Doctors Committee for Improved Federal Medical Services, Associate Clinical Professor, Industrial Medicine, New York University Post-Graduate Medical School, and General Medical Director, Standard Oil Company (New Jersey), was presented with a gold medal during his recent tour of South America by the Argentine Medical Association. The award, said Dr. Juan Kaplan, President of the Association, was a tribute to DR. PAGE as a medical man, as a scientist, and as an organizer and writer for his work towards a better understanding regarding modern medicine between the nations of the Western Hemisphere. DR. PAGE was also made a foreign corresponding member of the Argentine Medical Association. Following is the text of the award presented with the gold medal: "Because of his unselfish devotion to duty as a physician, scientist, organizer and writer, which

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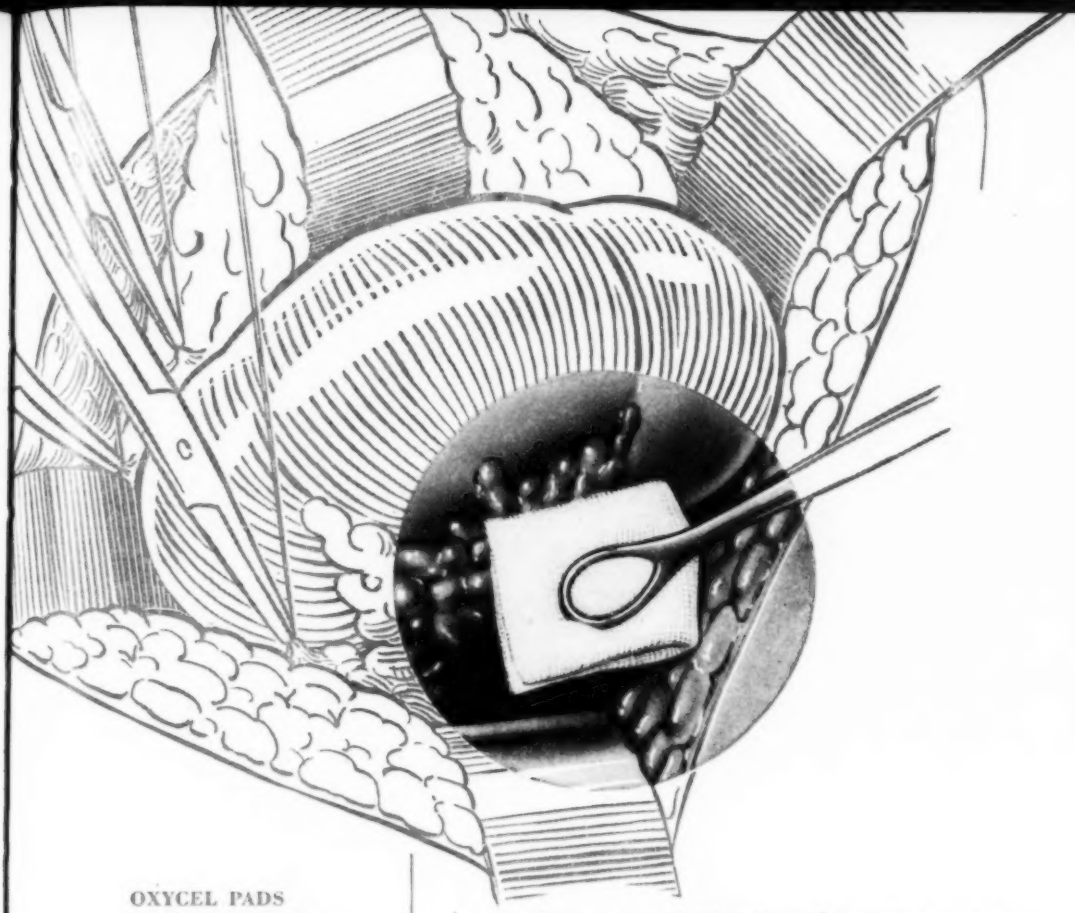

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has won for him international renown and high esteem among the members of the medical profession; because of his unflagging zeal in the pursuit of a better understanding among the nations of the Western Hemisphere of the common problems that must be met with relation to modern medicine; because of his contribution to industrial medicine literature in its broadest concept; because of his cultivation of the science and the art of medicine and particularly for having promulgated the principles of Constructive Medicine; because he has honored the Argentine medical fraternity by choosing from among the worldwide medical service of the Standard Oil Company (New Jersey), a local group of physicians, whom he himself orients and stimulates, to make the first practical experiment of Constructive Medicine of its kind ever carried out in the world; for all this, the Argentine Society of Social Welfare Medicine, a section of the Argentine Medical Association, confers this medal of honor upon DR. ROBERT COLLIER PAGE." The award was signed by Dr. Juan Kaplan, President, and Samuel Gurfinkel, Secretary, of the Association.

JOHN M. DALEY, M.D., and JOHN F. KOESTER, M.D., have joined the Medical Staff of Standard Oil Company (New Jersey) in the capacity of Physicians at Large. DR. DALEY, who was most recently on the medical staff of the Esso Standard Oil Company at 15 West 51st Street in New York City, received his B.S. degree from Yale University in 1938, and in 1942 his M.D. from Columbia University's College of Physicians and Surgeons. From July, 1943, to August, 1946, he was in the U.S. Army Medical Corps. Before joining Esso Standard Oil Company he was on the staff of the Lahey Clinic in Boston and, for a time, in private practice, specializing in internal medicine. DR. KOESTER, who comes from private practice in Davenport, Iowa, received his B.A. degree from the University of Iowa in 1939, and his M.D. from the University of Iowa School of Medicine in 1942. A Diplomate of the American Board of Internal Medicine, he was in the U.S. Army Medical Corps from 1943 to 1946. These two physicians are replacements for DR. JOHN J. THORPE who has ac-

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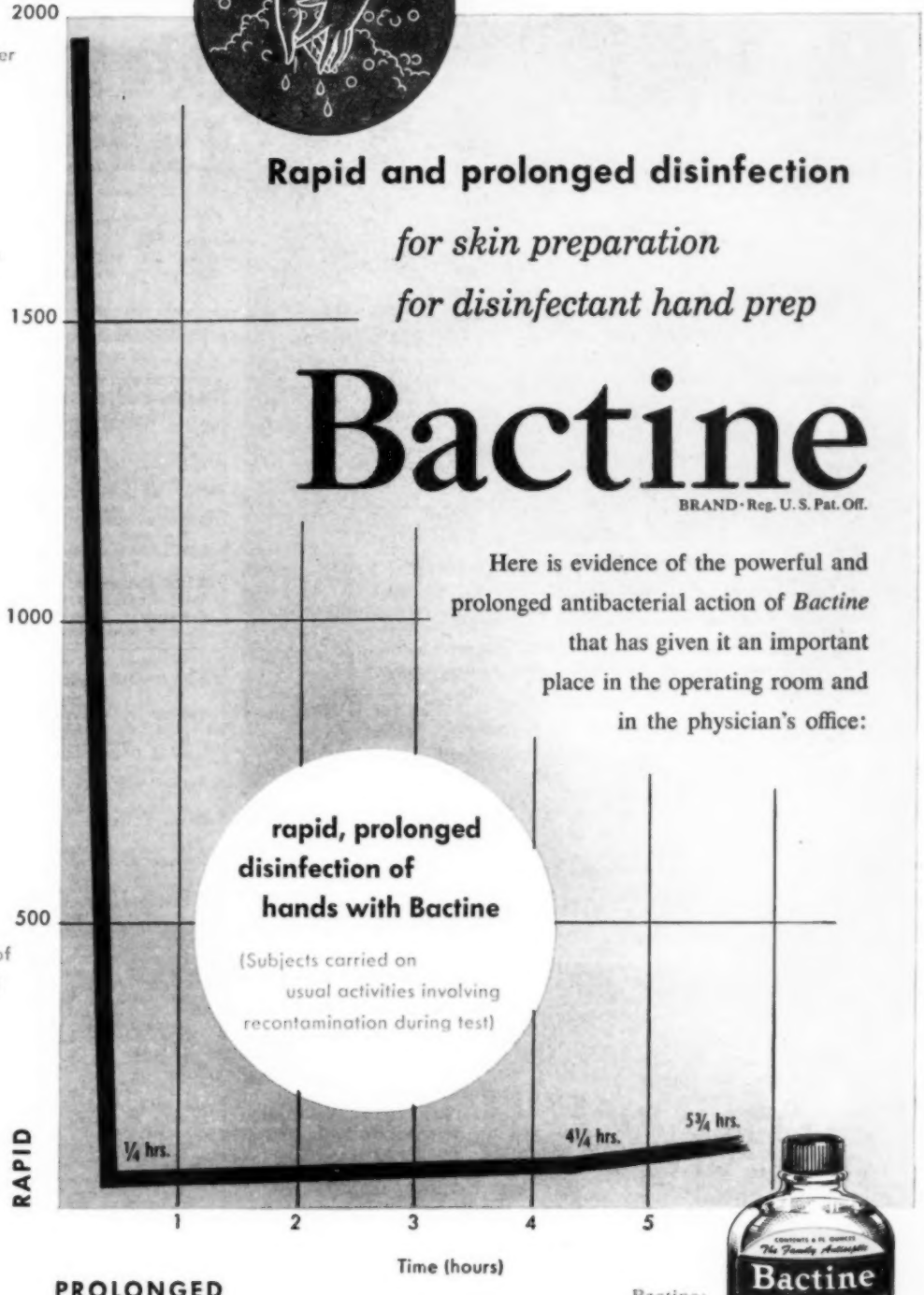

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cepted an assignment as Assistant Medical Director of the Esso Standard Oil Company, and DR. NORBERT J. ROBERTS who has resigned to accept the position of Chief Medical Officer for the Pennsylvania Railroad with headquarters in Philadelphia. DR. ROBERTS joined the medical staff at 30 Rockefeller Plaza in April, 1949. For the last 18 months he has been coordinating the medical affairs of the European affiliates. DR. THORPE has been a member of the medical staff of Standard Oil Company (New Jersey) since 1949. He was formerly resident physician and a research assistant in heart disease at New York Post Graduate Hospital. A graduate of Fordham University, he took his doctorate at Cornell University College in 1941 and interned at Post Graduate, where he is presently an Assistant Clinical Professor in Medicine. He served with the U.S. Army from 1942 to 1946, saw service in the European Theater, and was separated as Lieutenant Colonel. He has been certified by the American Board of Internal Medicine, and is an associate of the American College of Physicians. Among other professional affiliations, he is a member of the American Heart Association and the New York Heart Association.

JOSEPH SHILEN, M.D., Director of the Bureau of Industrial Hygiene of the Pennsylvania Department of Health, has been named Chairman-Elect of the AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS. DR. SHILEN was appointed Director of the Pennsylvania Bureau of Industrial Hygiene in 1940. Prior to that time he was Super-

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1. Gastric Tolerance for Aspirin and Buffered Aspirin. Ind. Med. 20:480, Oct. 1951.
2. Effect of Buffering Agents on Absorption of Acetylsalicylic Acid. J. Am. Pharm. Assoc., Sc. Ed. 39:21, Jan. 1950.

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intendent of the City Tuberculosis Hospital in Pittsburgh for a number of years, and had also engaged in private practice. He is a graduate of the George Washington University Medical School. His memberships include the Allegheny County Medical Association, the A.M.A., the INDUSTRIAL MEDICAL ASSOCIATION, the AMERICAN INDUSTRIAL HYGIENE ASSOCIATION, and he is a Fellow of the American Public Health Association. He is also Lecturer at the University of Pittsburgh Medical School, and at Pennsylvania State College.

INDUSTRIAL Hygiene Foundation's 1952 Annual Meeting will be held at Pittsburgh, November 19. The Foundation's Medical Committee now includes DRS. E. M. CARLETON, Inland Steel Company; L. E. HAMLIN, American Brake Shoe; A. G. KAMMER, Graduate School of Public Health, University of Pittsburgh; R. A. KEHOE, Kettering Laboratory, University of Cincinnati; E. M. KLINE, General Electric Corporation; L. C. McGEE, Hercules Powder Company; C. HOWARD MARCY, Tuberculosis League, Pittsburgh; C. M. PETERSON, AMA Council on Industrial Health; O. A. SANDER, Milwaukee; C. D. SELBY, School of Public Health, University of Michigan; W. P. SHEPARD, Metropolitan Life Insurance Company; J. F. SHRONTS, General Mills, Incorporated.

THIS MONTH

THE FOURTH Annual Meeting of the Michigan State Association of Industrial Nurses, at Detroit, January 12-13, 1952, directed its scientific program toward human relations, with emphasis on the significance and procedures of worker counseling as conducted by the industrial nurse. One objective of the continuing education of the nurse in industry is better qualification to participate helpfully in understanding the perplexities arising in industrial human relations. Constituting a Symposium on the nurse's role in such participation, were the three major presentations, by LEONARD E. HIMLER, M.D. (page 379), WILLIAM J. FULTON, M.D., (page 381), and LYON N. HOWLAND (page 390).... WE learn that there is a NATHAN MILLMAN, M.D., and a NATHAN MILLMAN, PH.D. It is the latter, not the former, who is identified with Ortho Research (see page 410)....THE Saranac Symposiums were initiated 18 years ago. Subsequently, Symposiums were conducted at intervals of a year or more. The first four were devoted to the broad field of pulmonary dust disease, but the fifth dealt with tuberculosis in industry, and the sixth, which was conducted in 1947, was concerned principally with the beryllium problem. The next Symposium, the seventh, will be held at The Saranac Laboratory for five days beginning September 22, 1952, and will deal with various aspects of the effect of inhaled substances upon the lungs of industrial workers. Included in the subjects for discussion are the following specific topics: definitions and terminology; review of silicosis, asbestosis and pulmonary granulomatosis in beryllium workers; pneumoconiosis in coal miners and in workers in certain other dusty occupations; experimental studies concerning ultramicroscopic dusts; inhaled industrial contaminants and pulmonary cancer; pulmonary function studies in pneumoconiosis; pulmonary disability; cardio-circulatory aspects of pneumoconiosis; legal concepts of disability; and workmen's compensation. Since the seating capacity at the Laboratory is limited, reservations for the course should be made early. Address Saranac Laboratory, Saranac Lake, New York ....FROM Stevenson's acceptance speech: "When the tumult and the shouting die, when the bands are gone and the lights are dimmed, there is the stark reality ...." He went on to indicate what the "stark reality" meant to him on the high plane of high office. His speech was a classic. But more, it set a lot of people thinking—people who now are facing stark realities of their own and for whom the dimly lighted silences are full of echoes that won't die down. One hears: "I have said to the mothers of America, and I will say it again and again and again...."; "tax and tax, spend and spend, elect and elect"; "the people are too damn dumb...."; "red herring"; "asinine"; "police action"; "inherent powers." One remembers the "lies, half truths, circuses, demagoguery" and general "insolence of office" of the last 20 years. One sees the increasing prices outrunning his over-taxed dollars. And soon will begin the old run-around of party promises not intended to be kept, and party pledges meant to be forgotten—the handout-baited "sooth for simple souls." There is hope, however. The two presidential candidates *this time* are men of intellectual and moral integrity. They "stand above the fog in public duty and in private thinking." They need the support of thoughtful men—men who think in terms of such things as are touched upon, for example, in the paragraphs on pages 378, 402, 405, 412, and elsewhere in this issue. Such are indicated in the honored injunction: "Think on these things." The resolutions, the actions, the votes that must come from enough of thinking on these things will be medicine for a sick nation....O. A. SANDER, M.D., in *Health*, published by the Wisconsin State Board of Health, writes as follows: "In Wisconsin well over 300,000 workers in the dusty trades have been x-rayed since 1933, both for placement purposes and as periodic observations. While the primary purpose was to determine the extent of the silicosis hazard in the dusty trades, the x-ray surveys have become an important tuberculosis case-finding project. It should be emphasized, however, that all of these chest x-ray studies have been combined with complete physical examinations, so as to place each worker on a job for which he is best fitted physically and mentally....From the standpoint of tuberculosis case-finding, mass x-ray surveys in Wisconsin industries have been a complete success. Moreover, they have served the useful purpose of making an increasing number of employers more health-minded. Experience has shown that in plants where active cases of tuberculosis are discovered, employers acquire a profound interest in their employees' general health and soon become conscious of the value of a more complete medical program. The ideal medical plan in industry is one in which the chest x-ray procedure is an integral and inconspicuous part of a complete examination and health program for all industries."

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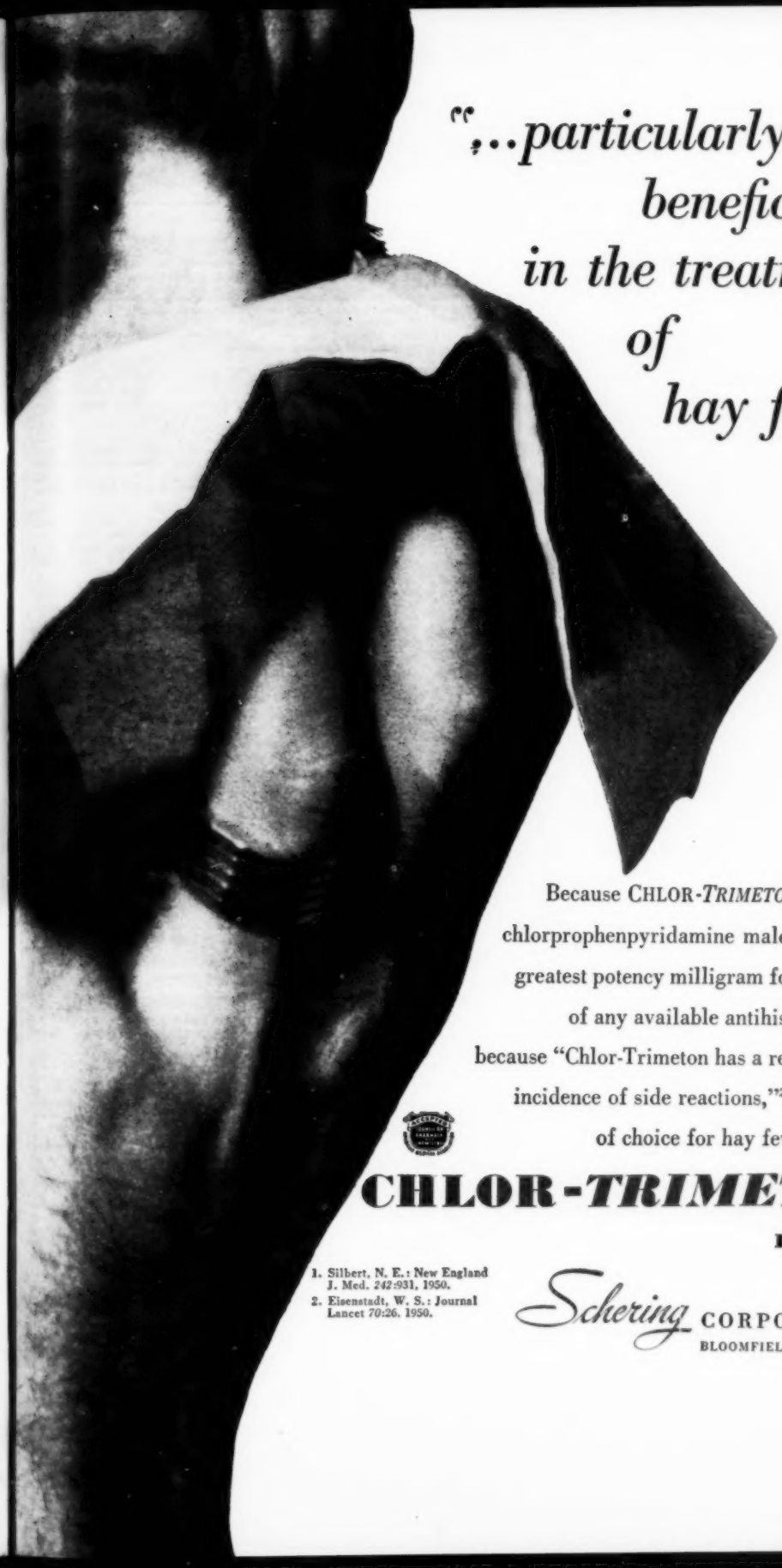

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2. Eisenstadt, W. S.: Journal Lancet *70*:26. 1950.

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Industrial Medical and Related Chronology selected and arranged by ROBERT T. LEGGE, M.D., F.A.C.S., Berkeley, California

"....his fervent hope that men
Could grow in spirit, so that *any* pain
Inflicted man to man
Would cause all men to suffer, every one—
—And then would none be cruel;
And only then
Would all men live in peace...."

♌ = Leo — July 23-August 21 ‖ ♍ = Virgo — August 22-September 21

1952 AUGUST

AUGUST—the month when time itself is tired—when the orb of morning rises right from Vulcan's smithy, and mid-day finds the cities shimmering and the countryside teeming with silence in the heated glaze. The month when the crops are in their teens, and the creeks and rivers flow in slow siesta. The month when the afternoon watches the sun shine through the trees in yellow honey streamers, while the hours drowse along like sated bees. The month when the sensible man hunts up a date with two black bass, or joins in a leisurely tryst with a tall mint julep somewhere in the shade....

☽ 1st Quar. ☺ Full Moon ☾ 4th Quar. ● New Moon

1 ♌ Fr
1542—Andreas Versalius, Professor at University of Padua, submitted to Charles V the preface to his great masterpiece, the "Anatomy of the Human Body." The book was published in 1543; it laid the cornerstone of medicine.

2 ♌ Sa
1906—G. W. Crile of Cleveland performed his first successful blood transfusion by end-to-end suturing of the vessel of one human being to that of another.
"A child thinks 20 shillings and 20 years can scarce ever be spent"—Washington Irving

3 ♌ S
1849—Dr. George Praslow, a Gottingen physician, arrived in San Francisco to spend seven years; described the flora, diseases, and climate during the Gold Rush days.
"The body is at its best between the ages of 30 and 35; the mind is at its best about the age of 49"—Aristotle

4 ♌ M
1938—Corneille Heymans, Belgian physician, Nobel Prize Winner, 1938, for his work on the sinus-aorta mechanism.
"It's a complex fate, being an American, and one of the responsibilities it entails is fighting against a superstitious valuation of Europe"—Henry James

5 ☺ Tu
1851—The French Government took the initiative for the first International Sanitary Conference which opened in Paris through the efforts of Melier, the French hygienist.
"You can't fool all the people all the time, but if you can do it once, it's good for four years"—TV

6 ♌ W
1473—Ulrich Ellenbog, M.D., of Field Kirch, chief physician of the Exalted Chapter at Angsburg Cathedral, published his monumental booklet on the injurious effects on goldsmiths of the smoke and fumes of materials with which they worked.

7 ♌ Th
1495—The first printed reference to epidemic syphilis appeared in the famous mandate of Emperor Maximilian I, "The Edicts of the Sins Against God," issued at Worms.
"The day when no one rattles a saber and no one drags a chain"—Adlai Stevenson

8 ♌ Fr
1901—Ernest O. Lawrence born at Canton, S.D., Professor of Physics, University of California, inventor of the Cyclotron. Made important researches in the structure of the atom, applied radioactive elements in medicine. Nobel Prize, 1939.

9 ♌ Sa
1867—Joseph Lister, of Glascow, the founder of Antiseptic Surgery, addressed the British Medical Association at Dublin on antiseptic principles in surgery.
"No man can end by being superior who will not begin by being inferior"—Sydney Smith

10 ♌ S
1921—The first successful experiment with Insulin was completed by F. G. Banting, C. H. Best, and J. J. R. McLeod, at Toronto.
"I have never refused any work that was given me to do"—John McCrea

11 ♌ M
1916—Dr. John B. Murphy, the famous Chicago surgeon, died. He was founder, and member of the Board of Regents, of the American College of Surgeons.
"Who are a little wise, the best fools be"—John Donne
"That old bald cheater, Time"—Ben Jonson

12 ☾ Tu
1865—Joseph Lister employed carbolic acid as an antiseptic to prevent infection in a case of compound fracture—the first step in the development of modern asepsis, a procedure which made possible the marvelous strides in modern surgery by applying the teachings of Pasteur.

13 ♌ W
1910—M. Makkas, a Bonn surgeon, developed an operation for ectopia of the bladder.
"Given three requisites—means of existence, reasonable health, and an absorbing interest, the years beyond 60 can be the happiest and most satisfying of a life time"

14 ♌ Th
1881—Carlos Finlay, of Havana, Cuba, read a paper before the Royal Academy propounding the theory that the propagation of yellow fever was by means of a mosquito.
"Words are like leaves, and where they most abound much fruit of sense beneath is rarely found"—Pope

15 ♌ Fr
1914—The opening of the Panama Canal, a monument in preventive medicine.
1905—August Gurber, a Wurzburg physiologist, developed a test for indican in urine.
"Honest labor bears a lovely face"—Dekker

16 ♌ Sa
1904—Dr. Wendel M. Stanley born at Ridgeville, Indiana, Professor, Biochemistry, and director Virus Laboratories, University of California. Isolated crystalline tobacco mosaic virus protein. Nobel Prize Winner.
"They do not live, but linger"—Burton

17 ♌ S
1848—Walter Wyman born at St. Louis, Missouri. Surgeon General U.S.P.H.S. 1891; was President, American Public Health Association.
"There is nothing so powerful as truth—and often nothing so strange"—Daniel Webster

18 ♌ M
1868—Mark L. Bishoff born at Harrisburg, Pennsylvania. Chief Surgeon, Atchison Topeka & Santa Fe, Topeka.
"The student of medicine should know that books in a physician's life are as essential as air and food and water" —Lewis J. Moorman

19 ♌ Tu
1933—William Duncan McNally, Chicago M.D., developed the technique of testing silicon dioxide content of lungs in health and disease.
"There are no points of the compass on the chart of true patriotism"—Winthrop

20 ● W
1897—Mosquito Day in honor of Ronald Ross, 1857-1932, regarded as the birthday of a new era in public health.
1915—Carlos Finlay died in Havana. His theory that yellow fever was carried by a vector, the Aides Egypt, was found correct.

21 ♌ Th
1821—Herman Ludwig Ferdinand Von Helmholtz, of Berlin, died. Was Professor of Physiology at Heidelberg, later Professor of Physics at University of Berlin. He suggested the electromagnetic theory of light and matter, a pioneer in the physical and medical sciences.

22 ♍ Fr
1864—The Geneva Convention was signed by 14 different states pledging themselves to regard sick and wounded and army medical staffs as neutrals on the battlefield.
"Those who treat politics and morality apart will never understand either one"—John Morley

23 ♍ Sa
1779—Baron Johan Jacob Berelius, noted Swedish chemist, teacher of medicine and pharmacy, born at Westerlosa. Introduced the new nomenclature of chemistry; discovered selenium, thorium, and cerium; was one of the originators of the electro-chemical theory.

24 ♍ S
1867—Johns Hopkins University incorporated at Baltimore; opened for instruction in 1876.
"It is curious, pathetic almost, how deeply seated in the human heart is the liking for gardens and gardening"—Alexander Smith

25 ♍ M
1841—Emil Theodor Kocher born at Bern. A Swiss surgeon, Professor at Bern University, made important investigations in reference to the thyroid gland. Nobel Prize, 1909.
"Diogenes struck the father when the son swore"—Burton

26 ♍ Tu
"It is a sad commentary on human weakness, the manner in which the discovery of a new method of investigation of great help, such as roentgenology, has led the medical public to neglect those fundamental methods of study which are far more important in themselves"—Thayer

27 ♍ W
1743—Antoine Laurent Lavoisier born in Paris. Discoverer of the interchanges of gases in the lungs. It is on his foundation that the science of metabolism was built.
"To live by one man's will becomes the cause of all men's misery"—Richard Hooker

28 ☽ Th
1898—Dr. James Carroll, U.S. Army at Camp Lazear, Cuba, allowed himself to be bitten by a mosquito which had bitten yellow fever patients and was infected by the disease. This proved that the mosquito acts as an intermediate host for the parasite of yellow fever.

29 ♍ Fr
1809—Oliver Wendell Holmes born at Cambridge, Massachusetts. Professor of Anatomy at Harvard, distinguished for his essay on the contagiousness of puerperal fever, and for his wit and humor as a facile writer of poetry and fiction.

30 ♍ Sa
1950—Loyal A. Shoudy, Chief of Bethlehem Steel Medical Department, died. Pioneer in industrial medicine; twice President, Industrial Medical Association.
"Only two things are essential: To live uprightly and to be wisely industrious"—Alfred Stille

31 ♍ S
1824—John Snow, London physcian, an epidemiologist during the cholera epidemic, proved that it was waterborne due to the Broad Street Pump.
"Cato said, 'I had rather men should ask why my statue is not set up, than why it is' "—Plutarch

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INDUSTRIAL MEDICINE AND SURGERY

The Journal of Medicine in Industry

With which are consolidated "The Industrial Doctor" and "International Journal of Medicine and Surgery"

Volume 21 AUGUST 1952 *Number 8*

Life Stress and Industrial Absenteeism

— The Concentration of Illness and Absenteeism in One Segment of a Working Population —

LAWRENCE E. HINKLE, JR., M.D.
Assistant Professor of Clinical Medicine, Cornell University Medical College
Physician, The New York Telephone Company
and
NORMAN PLUMMER, M.D.
Assistant Professor of Clinical Medicine, Cornell University Medical College
Medical Director, The New York Telephone Company

PAST STUDIES have revealed much about the causes of absence from work among industrial employees. It is known, for example, that the curve of absence rises and falls with the curve of the business cycle. It is known that absence is affected by such factors as the age of employees, their length of service, the type of sick benefit plan in the industry in which they work, the compensability of their ailments, and the administrative practices of those in supervision over them. It is known that in all industries the absence rate for women is far greater than that for men.[1] It is known that 90% or more of absence is caused by nonoccupational illnesses, of which the respiratory diseases greatly predominate while the digestive disorders run a close second. It has been recognized that especially among women employees the so-called "nervous ailments," although few in number, contribute a disproportionate amount of time lost. But absenteeism in industry is a problem of increasing magnitude for which we have no adequate answer. In these present days of full employment, time lost because of absence has risen to as high as 10% of total working time in some industries.

Some studies of the past decade have suggested that a relatively small proportion of the employees may contribute a disproportionate amount of the total absence. Fulton[2] stated that 68% of the minor sick absenteeism is produced by only 20% of the plant population. Johnson[3] estimated 55% to 60% of lost time as being attributable to 12% or 15% of the employees. Gafafer[4] reported that 27% of the female workers of a public utility contributed 63% of the disabilities over a six-year period. It has also been suggested that a small group of employees are responsible for the majority of accidents,[5] and there has been some evidence to indicate that those who are frequently ill have a higher accident rate than others.[6,7] Experience in working with female employees of the New York Telephone Company suggested that these latter observations were correct. Furthermore, information supplied by the supervisory personnel suggested that the same persons who were frequently absent constituted a disproportionate number of the individuals who were administrative problems for one reason or another. The present study was undertaken to investigate the distribution of absenteeism among a group of female employees and its relation to problems of administration and illness.

Method

FOR the purposes of this study a representative Traffic Operating Division of the New York Telephone Company was selected. This division is in New York City. It comprises, in all, 19 central offices and one administrative division office. In this division there were approximately 1700 employees who had originally been hired as telephone operators. Nearly all of these women had been employed between the ages of 16 and 25. At the time of employment they were examined physically, and none had been accepted except those who were physically healthy or had relatively minor defects. The large majority of these women were telephone operators, but a small proportion had become

The authors are indebted to a number of members of the staff of the Traffic Department, particularly MR. JOHN PFAFF, Division Personnel Supervisor, for their cooperation and assistance in carrying out this study; and to MR. R. C. HAWKINS, General Statistician, and to MR. J. W. ROPER, MRS. G. A. SALLUME and MR. F. S. CLAASSEN for their help in making the statistical studies.

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clerks at some time in their career. With regard to working conditions, travel to and from work, income, and place of domicile, the group could be considered relatively homogeneous. The Sickness Benefit Plan under which these employees worked during most of their career provided for payment from the eighth day of illness. For the period after 1940, all employees with more than two years of service have been paid after the second day of absence. The only types of absence which were excluded from the study were those attributed to maternity leaves or administrative leaves of absence, and excused short absences for such reasons as jury duty. The days lost, therefore, included a small percentage of brief absences attributed to personal or domestic causes. The results of this study were analyzed statistically. In addition, the medical records of certain selected groups of employees were carefully analyzed, and these employees were interviewed and examined in a manner which will be outlined.

Results of Statistical Study

COMPLETE records of attendance and complete medical records were available on 1297 of the 1700 individuals. The average lost time for this group of women in 1950 was 22.2 days. When the group was analyzed in terms of the number of days lost by each during the year and the results were graphed, it was found that they did not group themselves around this average in a bell-shaped distribution curve (Fig. 1). Instead, it was found that the largest single group of employees were those who had no absence. The distribution curve had a logarithmic shape with a long tail consisting of relatively few individuals with many days of absence. Nine hundred and twelve individuals lay below the average, and only 385 above the average. The 443 employees (34.2%) who had five days or less of absence in 1950 contributed a total of 856 days of absence (3.0%). On the other hand, the 418 employees (32.2%) with 21 or more days of absence during 1950 contributed 22,999 days (79.8%) of absence (Fig. 2). Analysis of the group in terms of the number of times absent gave a similar curve although the peak was somewhat less acute (Fig. 3). In terms of times absent it was evident that the 805 employees (62.1%) who were absent five times or less during the year contributed 1987 absences (31.0%), whereas the 118 employees (9.1%) who were absent 11 times or more during the year contributed 1569 absences (24.4%) (Fig. 4). In 1950, one-third of these women accounted for four-fifths of the total days lost.

The lengths of service of the employees in this group range from one year to 44 years. The initial year of service, therefore, covered a range of years from 1906 to 1950, during which all sorts of business conditions prevailed. When the employee group was analyzed in terms of number of days absent during the first year of service of each employee, the distribution of absence was more strikingly distorted than in the 1950 curve (Fig. 5). In the first year of service the 850 employees with five days or

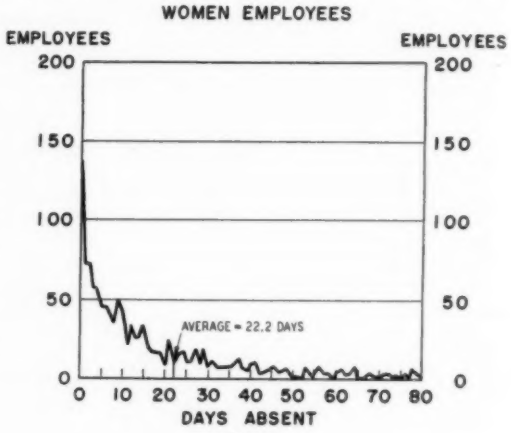

Fig. 1.
Number of Days Absent During 1950.

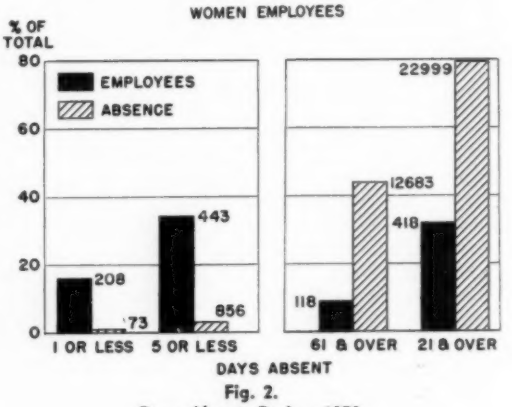

Fig. 2.
Days Absent During 1950.

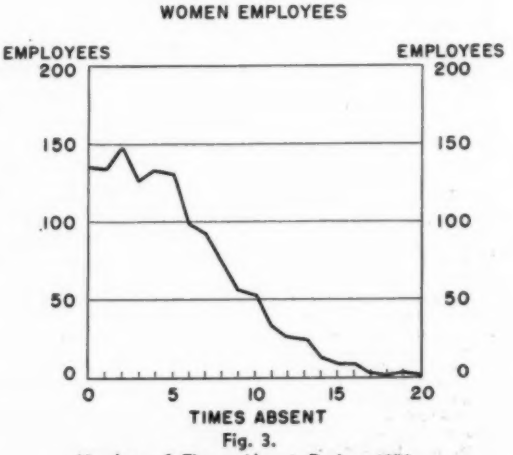

Fig. 3.
Number of Times Absent During 1950.

less of absence contributed 1237 days of absence, whereas the 97 individuals with 21 days or more of absence contributed 3551 days of absence. That is to say, the 65.7% of employees with lower absence contributed only 14.6% of the absence during the first year, whereas the higher 7.5% of the employees contributed 42%

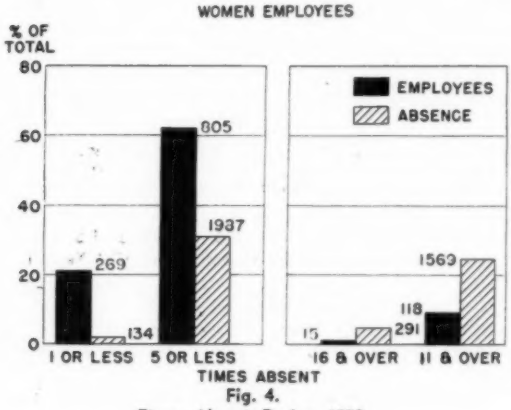

Fig. 4.
Times Absent During 1950.

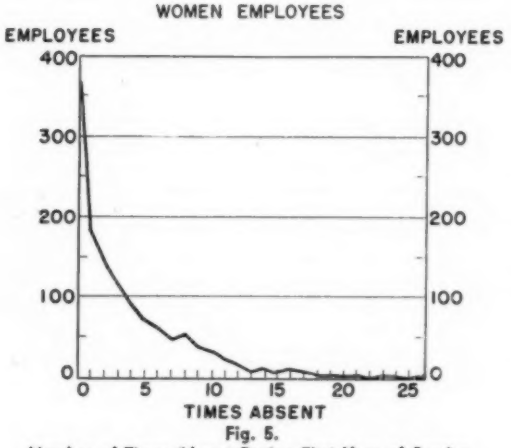

Fig. 5.
Number of Times Absent During First Year of Service.

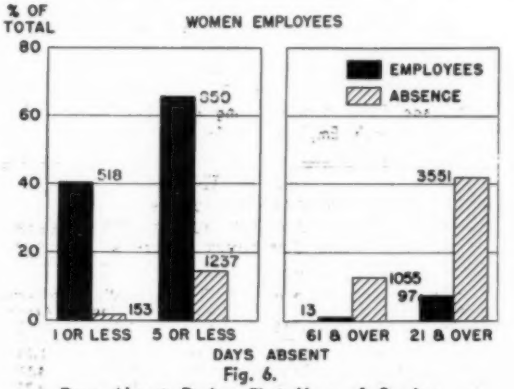

Fig. 6.
Days Absent During First Year of Service.

(Fig. 6). The distribution in terms of number of times absent during the first year of service was similar (Fig. 7). Distribution curves for the number of times absent and the number of days absent in the second year of service produced further curves of the same type.

The question arose, did the same group of employees contribute a disproportionate amount of absence year after year? It had been suspected on the basis of medical records that some individuals had consistently high absence rates and other individuals had consistently low absence rates. The record of each of the 1297 employees was therefore analyzed in terms of the amount of absence each year throughout total service, and the total amount of absence. It was found that whereas the absence for each employee might vary in amount from year to year, the average absence for the employees throughout their totaled period of service was distributed in a manner similar to that for their first and second years. When employees were grouped according to the amount of absence which they had had in the first year of service, and this was plotted against the average number of days absent per year throughout the entire period of service, it was found that the points lay along a straight line (Fig. 8 and Table I). The employees with the least absence during the first year had the least average absence throughout their entire period of service, and so on, up to the employees with the highest absence during the first year, who had the highest average absence throughout their entire period of service. A predictability curve was also obtained when times absent during the first year was plotted against average times absent throughout the entire period of service (Fig. 9 and Table II). The predictability curve for average *days* absent was a straight line but that for average *times* absent was a curve tending to flatten out somewhat in the higher regions. It was felt that this flattening of the curve might be the result of the intervention of man-

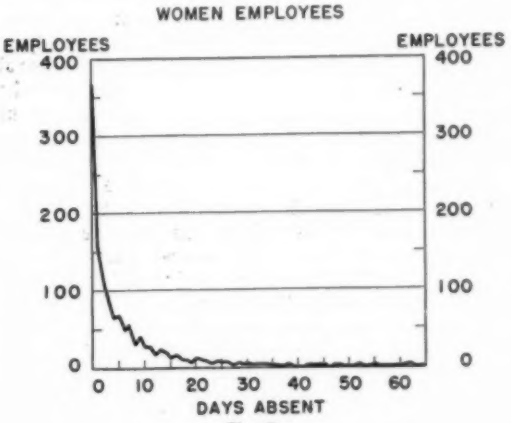

Fig. 7.
Number of Days Absent During First Year of Service.

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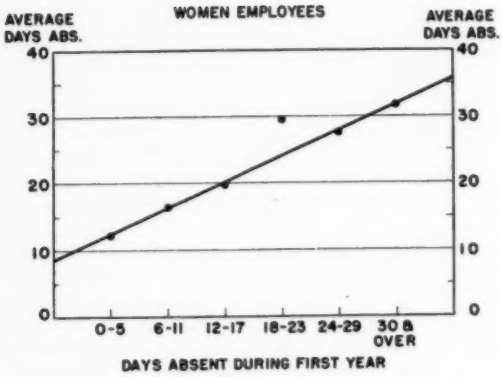

Fig. 8.
Average Days Absent Per Year for Period of Service Compared with Days Absent During First Year.

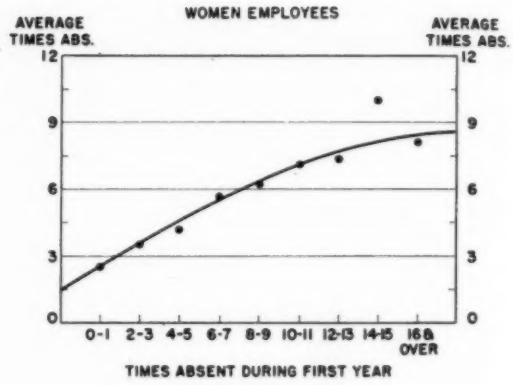

Fig. 9.
Average Times Absent Per Year for Period of Service Compared with Times Absent During First Year.

TABLE I.
WOMEN EMPLOYEES
AVERAGE DAYS ABSENT PER YEAR FOR PERIOD OF SERVICE
COMPARED WITH DAYS ABSENT DURING FIRST YEAR

Days Absent During First Year	Average Days Absent Per Year for Period of Service Through 1950
0- 5	12.05
6-11	16.53
12-17	19.92
18-23	29.80
24-29	27.75
30 and Over	31.81

agement; that is to say, among the group of individuals with 12 or more times absent during the first year, those who did not improve in subsequent years were separated from the payroll or resigned, and the remaining members of the group were those with improved attendance.

To determine if any correlation existed between the group of employees who are administrative problems and those who were attendance problems, arrangements were made to have these employees rated in terms of their performance in 1950. Employees were rated on attitude, ability to get along with others, and quality of work. The ratings were good, fair, and poor, in each category. These ratings were made by the chief operators of each of the 19 central offices. The chief operators had observed the employees under their supervision throughout the period of 1950; but they had not known most of them throughout their entire careers, because of the fact that employees are usually moved from one office to another in the Metropolitan Area of New York, the average stay in an individual office being several years. It was recognized that the rating of the chief operator might be influenced by her knowledge of the employee's attendance during the period in which the employee was under her observation. For this reason, the ratings as obtained were correlated not with absence during 1950, but with absence during the first year of service, however distant that may have been in the past. There

TABLE II.
WOMEN EMPLOYEES
AVERAGE TIMES ABSENT PER YEAR FOR PERIOD OF SERVICE
COMPARED WITH TIMES ABSENT DURING FIRST YEAR

Times Absent During First Year	Average Times Absent Per Year for Period of Service Through 1950
0- 1	2.50
2- 3	3.54
4- 5	4.22
6- 7	5.67
8- 9	6.19
10-11	7.05
12-13	7.30
14-15	10.02
16 and Over	8.06

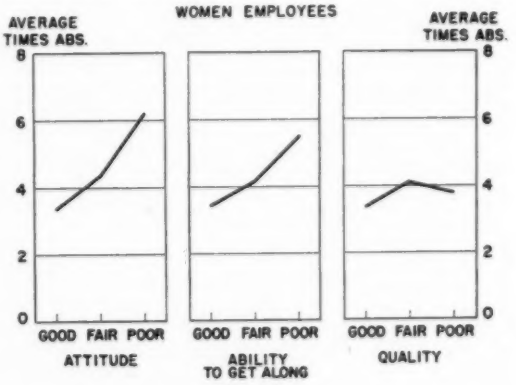

Fig. 10.
Average Times Absent During First Year Compared with Employee Ratings in 1950.

TABLE III.
WOMEN EMPLOYEES
AVERAGE TIMES ABSENT DURING FIRST YEAR COMPARED WITH EMPLOYEE RATINGS IN 1950

Attitude Rating in 1950	Av. Times Absent During 1st Yr.	Ability to Get Along Rating in 1950	Av. Times Absent 1st Yr.	Quality Rating 1950	Av. Times Absent 1st Yr.
Good	3.38	Good	3.45	Good	3.38
Fair	4.36	Fair	4.16	Fair	4.11
Poor	6.19	Poor	5.50	Poor	3.77

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was found to be a positive correlation between good attitude and good ability to get along with people in 1950, and low absence during the first year of service. There was some slight correlation in terms of quality of work (Fig. 10 and Table III). These findings suggested that attitude and ability to get along with others are affected by the same factors that affect absence. The poorer correlation of absence with quality of work may be a reflection of the intense administrative attention to work quality which has characterized this industry throughout the period studied. During this time supervisory personnel were much more prepared to tolerate poor attendance, poor attitude and poor ability to get along with others than they were to tolerate a poor quality of work. It is quite likely that those with a consistently poor work performance were rapidly dropped from the group.

Medical Study of Selected Groups of Employees

IN THIS group of 1297 employees there were 336 who had 20 or more years of service in 1950. It was decided to select from these 336, 20 who had had very little absence throughout their service career, and 20 who had had a great deal of absence. These selections were made solely on the basis of attendance, without previous knowledge of the medical records of the employees. The groups were quite comparable in terms of both age and length of service. The average age of the women in the good attendance group was 48.8 years, and the average length of service was 28.8 years. The average age of the women in the poor attendance group was 46.1 years and the average length of service was 25.9 years. It had been intended that the 20 individuals with the most absence be compared with the 20 individuals with the least absence. However, one of the individuals assigned to the low absence group initially, was found after the study was partly completed to have somewhat more absence than had initially been indicated. She was not a high absence employee but an employee who did not fall into the lowest absence group. The weighting of the results by the presence of this employee tended to diminish rather than enhance the striking findings which were obtained and she was, therefore, allowed to remain a member of the group. As will be noted below, she contributed as much absence to her group as did the other 19 members of the good attendance group altogether.

Once the names of these employees had been obtained, their medical records were carefully scrutinized by staff physicians. These records contained some notation covering almost every illness and disability from which each employee had suffered throughout her entire term of service. In connection with most of these illnesses there were visits to the Medical Department and descriptions of examinations made at that time. These were supplemented by notations of telephone reports from private physicians, certificates sent in by private physicians, and abstracts of hospital records. Because of the fact that the diagnostic statement of the private physician made in his initial certificate or telephone message might be incorrect for various reasons, careful evaluation of the signs, symptoms and course of each illness was made in order to confirm or revise the stated diagnosis in accordance with the apparent facts as well as in accordance with the later knowledge provided by the advances in medical science. Medical diagnoses reported in these studies are, therefore, more accurate than they would have been had the raw data alone been utilized.

In addition to this scrutiny of the records, each of these 40 individuals was seen in the Medical Department. She was interviewed at length. A complete medical history was obtained from her. In addition, biographical data covering her family history, her cultural, social and economic background, and her life history in detail were also obtained. Her present life situation was investigated, and careful note was made of any evidences of disturbances of mood, thought and behavior. These interviews, where possible, were supplemented by physical examinations and appropriate laboratory and diagnostic procedures.

It was found that the applicant examinations of these two groups of individuals provided no indication of the subsequent course of their health. The minor physical defects found in the various employees were distributed throughout the groups of good attendance and poor attendance employees.

The employees with poor attendance greatly exceeded the employees with good attendance in all categories of subsequent illness. These categories of illness were grouped according to the major bodily organ systems. As had been expected, it was found that the respiratory illnesses were the largest group of disorders attributed to any single system. Minor respiratory infections were far more frequent in the poor attendance group than in the good attendance group, the ratio being about 12 to 1. In addition to this, it was evident that there was much more chronic respiratory disease and many more episodes of serious respiratory illness among the poor attendance group than among the good attendance group. In the poor attendance group there were found episodes of lobar pneumonia, bronchopneumonia, pleurisy with effusion, hemoptysis, bronchiectasis and asthma, whereas all of these more serious episodes had been absent in the members of the good attendance group. In addition to this, such disorders as chronic sinusitis, chronic post-nasal drip, chronic tonsillitis and chronic bronchitis were much more common in the group with poor attendance (Table IV).

Much the same pattern was found with regard to disorders of all of the other organ systems. In the gastro-intestinal system the epi-

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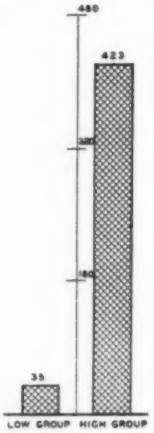
TABLE IV.
RESPIRATORY DISORDERS
Women Employees

Low-Absence Group		
Diagnoses	Instances	Persons
Influenza	2	2
Pertussis	1	1
Chronic bronchitis	1	1
Chronic tonsillitis	4	4
Acute tonsillitis—pharyngitis	7	6
"Colds"—grippe	15	11
Acute sinusitis	2	1
Chronic sinusitis—P.N.D.	2	2
Allergic rhinitis	1	1



High-Absence Group		
Diagnoses	Instances	Persons
Lobar pneumonia	1	1
Bronchopneumonia	2	1
Asthma	1	1
Bronchiectasis	1	1
Pleurisy with effusion	1	1
Hemoptysis	2	1
Pertussis	2	2
Influenza	10	9
Virus pneumonia	3	3
Pleuritic pain ("dry" pleurisy)	13	7
Chronic bronchitis	7	6
Acute tracheobronchitis	74	16
Laryngitis	30	16
Chronic tonsillitis	5	5
Acute tonsillitis—pharyngitis	62	13
"Colds"—grippe	158	17
Acute sinusitis	39	11
Chronic sinusitis—P.N.D.	8	8
Allergic rhinitis	1	1
Epistaxis	1	1
Deviated septum	2	2

sodes of such minor functional disorders as nausea, vomiting, hyperacidity, and constipation were much more frequent in those with poor attendance than those with good attendance. In addition, those with poor attendance included people with ulcerative colitis, cholecystitis, cholelithiasis, hiatus hernia (associated with severe symptoms), and peptic ulcer; whereas the good attendance group included only one individual who had duodenal ulcer and an episode of cardiospasm. All of the other members of the group were free of these serious manifestations, and had only a relatively small number of the minor functional disorders. It is interesting to note that the single individual with the duodenal ulcer and esophageal spasm was the one individual who was included in the good attendance group by mistake.

The most outstanding difference observed was that in the gynecological disorders of the two groups of women. The women with a low absence rate had experienced phenomenally good health with regard to their genital systems. None had had any menstrual abnormality, and the only gynecological disturbance found in the group was one instance of post-menopausal bleeding. There were serious menstrual irregularities in a large number of the women with a high absence rate, as well as other illnesses, such as uterine myomata, salpingitis, and spontaneous abortions. The so-called menopausal symptoms were entirely concentrated in this group, while the women with good attendance had all passed through menopause uneventfully.

Among the disorders of skin, eye, ear, teeth, bones and joints, musculature, and the urinary system, there was a similar concentration of illness in the group with poor attendance. This group had many more minor manifestations of illness in these systems, and nearly all of the major manifestations of illness. Such miscellaneous disorders as angiosarcoma, epilepsy, herniated nucleus pulposus, headaches, and fever of unknown origin, were also entirely concentrated in the poor attendance group.

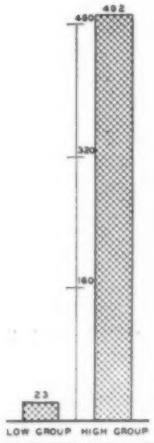
In the cardiovascular system the results were somewhat less striking. There were five individuals with hypertension in the group with low absence and seven in the group with high absence. In the low-absence group all of the hypertension was asymptomatic, whereas in the high-absence group it was accompanied by many symptoms such as palpitation, extra systoles, tachycardia and headache. In this group also appeared an individual with two coronary occlusions and angina pectoris, as well as all of those individuals with disorders of the peripheral vessels, such as phlebitis and varicose veins. Obesity also was rather equally distributed between the two groups. There were eight obese people in the good attendance group and 13 in the poor attendance group. However, other metabolic disorders were much more frequent in the group with poor attendance. Such disorders as Grave's disease, goiters and thyroid adenomas, were found only in the high absence group, although there was one individual in the low absence group with mild asymptomatic diabetes mellitus of several years standing.

There are relatively few occupational disorders associated with telephone operating, of which the only one seen in these two groups was a pressure sore of the ear caused by the pressure of the telephone ear-piece. There were five instances of this in three of the poor attendance women, and five instances in two of the good attendance women.

In both groups it was found that the disorders of feeling-state, thought and behavior which make up what is commonly called the "nervous

TABLE V.
DISORDERS OF FEELING-STATE, THOUGHT AND BEHAVIOR
Women Employees

Low-Absence Group		
Diagnoses	Instances	Persons
Tension	8	5
Anxiety	5	3
Asthenia	3	3
Mild depression	3	3
Insomnia	1	1
Brief situational upsets	3	3



High-Absence Group		
Diagnoses	Instances	Persons
Tension	126	18
Anxiety	94	18
Asthenia	118	19
Mild depression	63	16
Major depression	1	1
Nervous breakdown	2	2
Panic	1	1
Schizophrenia (paranoic)	1	1
Alcoholism	1	1
"Psychoneurosis"	9	5
Hypochondriasis	1	1
Obsessions—compulsions	1	1
Phobic symptoms	1	1
Post-concussion syndrome	1	1
Insomnia	17	10
Anorexia	4	4
Hysterical Symptoms:	26	9
Pains	10	3
Globus	2	2
Aphonia	2	2
Coccydynia	1	1
Anesthesia	3	2
Syncope	4	4
Spasm of eyelids	1	1
Fits	1	1
Vomiting	1	1

and emotional" or "psychoneurotic" group of illnesses, were much more common than a simple recording of the diagnoses indicated by the private physicians would have shown. In past time it has been customary to disguise such disorders in terms of euphemisms, such as "functional endocrine," "fatigue state," "run-down condition," or simply as "grippe," or "virus." When the symptomatology and manifestations of the various episodes of illness of these two groups of people were carefully evaluated, it was found that symptoms of tension, asthenia, anxiety and mild depression were probably the most common of those encountered, and the number of absences which could be attributed to such manifestations is as great as the number actually attributable to upper respiratory infections. In fact, in all of the group of employees in the poor attendance category these symptoms were almost constantly present throughout long periods of their employment. Because of their constant presence symptoms of this nature colored all of the other absences. For example, it was found that when a typical woman was absent for one month with grippe, her illness might begin with mild symptoms of rhinitis, scratchy throat, cough and slight fever, characteristic of a cold, but that these symptoms would subside in a few days. However, concomitant symptoms of tension and asthenia which rose to the surface at the same time continued to cause this employee to feel tired, weak, nervous, and sleepless, and to remain off duty for three weeks or more. Thus, it became evident that while there is a real excess of minor respiratory infections among the poor attendance group of employees, this excess itself was somewhat exaggerated, and the total time lost was greatly exaggerated by the simultaneous presence of disturbed feeling-states. A breakdown of the illness in terms of disorders of feeling-state, thought and behavior, revealed a remarkable prevalence of these manifestations (Table V). There were 492 instances of these disorders in the 20 poor attendance individuals. Manifestations of tension, asthenia, anxiety, and mild depression occurred in almost all of them, and more severe illnesses, such as paranoid schizophrenia, alcoholism, and phobic and compulsive states were also seen. There was a surprisingly high incidence of hysterical or conversion manifestations. Nine of these individuals exhibited 26 separate episodes of what could reasonably be termed hysteria. Two of these women showed the classical picture of conversion hysteria, and several others showed pronounced hysterical manifestations associated with anxiety; but isolated episodes of a hysterical nature occurred in other women whose major symptomatology was that of tension, asthenia or mild depression.

In this category of illness, then, the findings were much the same as in all of the other categories of illness. There were only 23 instances of disturbances of feeling-state or behavior in the group with low absence as compared with 492 in the group with high absence. Again those manifestations which occurred in the low absence group were the minor manifestations such as anxiety, tension, insomnia, asthenia and mild depression, and these occurred on relatively few occasions; whereas similar manifestations were

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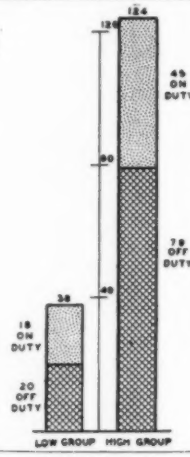
TABLE VI.
ACCIDENTS
Women Employees

Low-Absence Group		
Diagnoses	Instances	Persons
Fractures	3	3
Sprains, severe	3	3
Sprains, strains, minor	4	4
Contusions, abrasions, minor	16	12
Lacerations, minor	3	2
Burns, minor	3	2
Foreign body in eye	1	1
Broken tooth	1	1
"No injury"	4	4



High-Absence Group		
Diagnoses	Instances	Persons
Fractured skull—brain injury	2	2
Concussion	2	2
Fractures	6	4
Herniation—nucleus pulposus	1	1
Burns, major	2	2
Contusions, abrasions, severe	23	9
Contusions, abrasions, minor	43	14
Sprains, severe	9	5
Sprains, strains, minor	17	11
Lacerations, major	2	2
Lacerations, minor	15	8
Burns, minor	3	3
Foreign body in eye	3	3
Electric shocks	1	1
Insect bites	1	1
"No injury"	8	6

much more frequent in the group with poor attendance and the more severe disorders occurred solely in this group.

The same pattern was apparent with regard to accidents. There were 133 accidents recorded in the poor attendance group and only 38 in those with good attendance. Nearly all of the accidents in the good attendance group were of a minor nature and led to no disability or lost time; whereas the major accidents such as fractured skulls, concussions, major burns, major lacerations, fractures of long bones, and severe contusions were all localized in the group with poor attendance (Table VI). The group with poor attendance had lost a total of 2170 days because of accidents, whereas the group with good attendance had lost only 91 days.

In view of the larger incidence of illness in the poor attendance group it might be expected that the women in this group would have had more operations than those in the group with good attendance. This was found to be the case (Table VII).

The total amount of absence attributed to the group with poor attendance was 24,185 days, whereas the total amount of absence attributed to the group with good attendance was 667 days. Of these 667 days, 333 days of absence were contributed by the one woman with somewhat poorer attendance who was inadvertently included in the group.

An effort was made to come to some understanding of why illness and absence so much predominated in one group as compared to the other. The results of these studies will be described at greater length elsewhere but can be summarized here. It was found that the cultural and economic backgrounds of the two groups were quite similar. Both were made up of second generation women of Italian or Irish background, and as such they are representative of the larger group of employees from which they were abstracted. In both groups it was found that there had been many instances of poverty and of the early death of one or both parents. It could not be determined from the information these women gave about their family histories that the parents of either group were more healthy, more long-lived, or more free of familial diseases than those of the other. Among the parents of the women who later became ill, there were somewhat more instances of such outstanding disorders of the personality as alcoholism, brutality and neglectfulness; but some instances of this were also seen in the parents of the group of well women. Likewise, there was no striking difference in the amount of childhood disease seen in the two groups. Bearing in mind the fact that probably some of the ill women tended to conceal earlier evidence of illness, nevertheless one could state that outstanding evidences of childhood illness also occurred in the group of women who were later well. The groups were similar also in terms of education. Nearly all had graduated from grammar school at about the age of 12 to 14 and had gone no further in their studies. Nearly all had gone to work at an early age and had held several jobs before becoming telephone operators at the age of 16 to 20.

The one outstanding difference in the histories of the two groups lay in the degree to which they had been exposed to what is broadly termed "life stress" throughout their period of employment. The well women had been content, comfortable and secure in their life situations. The ill women, however, had been made unhappy, insecure and discontented by repeated frustrations, deprivations, unrewarded responsibility, and inter-personal conflicts throughout their adult lives.

Nearly all of the well women were women

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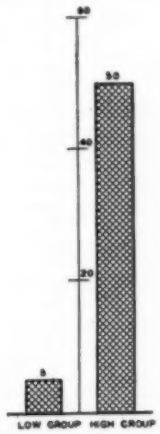
TABLE VII.
SURGICAL OPERATIONS
Women Employees

Low-Absence Group

Diagnoses	Instances	Persons
Appendectomy	1	1
Tonsillectomy—adenoidectomy	3	3
Excision of sebaceous cyst	1	1



High-Absence Group

Diagnoses	Instances	Persons
Cholecystectomy	2	2
Appendectomy	8	8
Hysterectomy—oophorectomy	2	2
Oophorectomy	4	4
Tonsillectomy—adenoidectomy	8	8
Dilatation and curettage, diagnostic	4	4
Completion of spontaneous abortion	2	1
Hemorrhoidectomy	5	3
Excision of fistula in ano	1	1
Exploration of spine	2	1
Spinal fusion	1	1
Excision of sarcoma of arm	1	1
Excision of sebaceous cyst	1	1
Excision of meibomian cyst	1	1
Excision of chalazion	1	1
Submucous resection	2	2
Irrigation of calcified bursa	1	1
Incision and drainage, abscess	4	3

who had had no great desire to be married and who had been quite content with a career as single women and telephone operators. They were individuals who were able to make friends readily. They were "outward going" and capable of diffuse emotional attachments. In any group in which they found themselves they soon became happy and well liked. Among these women there were many instances of profound loyalty and deep attachment to parents, brothers and sisters, or husbands, but the loss of these individuals from their lives led to no prolonged disturbance of their mood or behavior. They were individuals with no unalterable goals in life. They had grown up without any settled idea of what they "should" or "should not" do in terms of a career and without any preconceived notions of what they wanted to do above all else. Some of them had been offered promotions from time to time in the past but had refused these promotions simply because they felt more happy with the lack of responsibility and comfortable hours which they had attained in their present position. They rapidly adapted to being moved from one type of operating to another or from one office to another. Because of their capacity to make friends, their failure to complain, and their pliability with regard to assignments, they were well liked by their associates and by their supervisors.

The group of women who were ill were quite in contrast to the group who had been well. This group of women had nearly all desired to be married and to have a family which was supported by a husband. They had gone to work as telephone operators with the idea that they would work for a few years, accumulate savings and a few worldly goods, and then be married and stop working. For one reason or another they had been frustrated in this goal. Some had been saddled with ill parents for whose care they were responsible. They had, therefore, felt unable or unwilling to be married and had continued in a state of resentment and frustration thereafter. Others had married only to find that their marriages soon dissolved. In some instances this was the result of incompatibility and divorce, in some instances it was the result of desertion or lack of support by the husband, and in some instances it was the result of his early death. Some of these women were left with young children to support. Several, because of their religious beliefs felt precluded from obtaining a divorce or making another marriage. They had, therefore, returned to telephone operating as a necessary means of making a living. They had "struggled" through life, attempting to work and at the same time to raise a family or care for an ailing relative. Their moods were constantly those of frustration, resentment, depression and anxiety which so characterized the so-called "nervous and emotional illnesses" present among them. They were not outward-going individuals, but tended to be defensive, suspicious and somewhat hostile. They did not make friends easily, and drew little sustenance from the group among whom they worked. Nor were they readily deviated from their goals or their position in life. If moved from one office to another, or one job to another, they reacted to this with distaste and with complaints. As a group, they were women of ambition. Once in the company, they had attempted to get ahead. They had accepted higher positions if these were proffered, and had resented it if they were not. They were, therefore, not well liked by those in supervision over them, and they reciprocated this dislike. As a group they were not happy with their jobs, and were, therefore, prepared to welcome any oppor-

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tunity to be absent with a legitimate excuse. On the other hand, under the pressure of economic necessity, they were prepared to work. They tolerated their symptoms and their various illnesses in times of economic distress when there was some reason for them to fear that they might lose their jobs.

Comment

THE results of these statistical studies confirm the earlier findings of Fulton, Johnson and Gafafer which have been cited previously. It is evident that in any one work year about two-thirds of the absence in this group of employees was contributed by about one-third of the individuals. It becomes further evident from this analysis that the same employees contribute a disproportionate amount of the absence throughout their entire period of service, i.e., the group may be divided into employees with a consistently low absence rate and other employees with a consistently high absence rate. The two groups, of course, shade off into each other with no distinct point of separation. Furthermore, it is apparent that the group of employees with the consistently high absence rate includes a large proportion of the employees who are regarded by their supervisors as having a poor attitude and poor ability to get along with those around them.

The medical studies indicate that the women in the group with a high absence rate had far more illnesses of all types than those in the group with a low absence rate. Minor manifestations of illness of all types were seen in the women with a low absence rate but these were many times more frequently seen in the women with a high absence rate. The severer manifestations of illness of all types were almost entirely confined to the women with a high absence rate. The women with a low absence rate had relatively infrequent accidents of a minor nature, rarely disabling. The women with a high absence rate had much more frequent minor accidents, and nearly all of the major accidents, which led to prolonged disability. There were only four surgical procedures in the women with good attendance, while there were 52 surgical procedures, many of them of a major nature, in the women with poor attendance. The two groups could, with great justification, be referred to as a "well group" and an "ill group," and it might also be said that the ill group was "accident prone."

Comparison of the medical records of the two groups of individuals confirms the fact that minor illnesses of all bodily systems are widespread throughout the general population, and occur in all individuals from time to time under appropriate circumstances of exposure to stress. This also holds true for the transitory disturbances of feeling-state, attitude and behavior which are commonly termed, tension, anxiety, asthenia or mild depression. The fact that the members of the high absence group tended to take more time off with these minor ailments because of their general attitude and feeling toward their work unquestionably entered into the high total number of days lost by the group with poor attendance. But no matter how much weight one gave to the effect of attitude on the length of individual illnesses of these employees, it was nevertheless evident that episodes of minor illness in all bodily systems were much more frequent in the people with poor attendance than in the members of the group who had good attendance. One would expect that the group of unhappy, tense and anxious women might have had more neurodermatitis, more complaints of minor abdominal pain, dysmenorrhea, and more visits to the Medical Department for minor bumps and bruises. Such manifestations might be regarded as a part of their pattern of behavior. However, it is also evident that these women had more herpes zoster, eczema, acne, otitis media, pyorrhea, nausea, vomiting, constipation, diarrhea, cystitis, menorrhagia, menstrual irregularity, osteoarthritis, asymptomatic goiters, and low back pain than did their coworkers in the good attendance group. Not only this, but also they had more frequent sprains, strains, bruises, minor lacerations and burns, than did the low absence group. Examinations in the Medical Department and descriptions of the lesions unequivocally bear this out.

A further striking fact is the concentration of serious illness almost entirely in the group with poor attendance. Such illnesses as lobar pneumonia, bronchial asthma, pleurisy with effusion, bronchiectasis, peptic ulcer, cholecystitis, cholelithiasis, ulcerative colitis, uterine fibromata, spontaneous abortion, severe uterine hemorrhages, pyelitis, coronary occlusion, angina pectoris, herniated nucleus pulposus, angiosarcoma, hyperthyroidism, tuberculous chorioretinitis, otitis media, epilepsy and severe dental caries, were all found almost entirely in the group with high absence. The only severe forms of bodily illness found in the group with good attendance were one peptic ulcer, one case of mild diabetes mellitus, and five instances of hypertension. It has been noted that the instance of peptic ulcer occurred in the one woman who was inadvertently included in the group. Likewise, the major manifestations of disturbed feeling-state, attitude and behavior were in the group with high absence, as well as all of the major bodily injuries. It was in this group that one found the alcoholic, the paranoid schizophrenic, the women with major symptoms of anxiety, tension, depression, asthenia, compulsions and phobias in whom a diagnosis of "psychoneurosis" had been made, as well as the two individuals who seemed clearly to fall into the category of conversion hysterics. It was also in this group that one found nearly all the episodes of fractured skull, fractures of long bones, major lacerations, contusions, abrasions and sprains, as well as nearly all the major surgical procedures.

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Industrial absenteeism is not simply a reflection of physical disability. The amount of time which an individual spends away from work with each period of ailment is in part under his own conscious and volitional control. The fact that absence goes up when jobs are plentiful and goes down when jobs are scarce, the fact that it is high in offices with poor morale and low in offices with good morale, and the fact that it increases as sickness benefit programs are liberalized, are all indications of the actions of this factor. It is obvious that employees who are interested in their jobs and enjoy their work and their surroundings will tend to take as little time off because of illness as they reasonably can; whereas employees who are unhappy, dissatisfied and do not like their jobs or their working conditions can be expected to exploit every reasonable opportunity which is given to them to be away from work with a legitimate excuse and the assurance of a steady income. Likewise, it could reasonably be expected that those who have fewer responsibilities and entanglements outside of their work would find less reason to be absent than those whose lives are primarily dedicated to the task at hand. In this sense it is, therefore, not surprising that this study confirms the fact that those employees in the group with good attendane were employees with "a good attitude" and that those employees with poor attendance were those with "a poor attitude." But it is also of great significance that those employees with "a good attitude" were those who were well, whereas those with "a poor attitude" were those who were ill.

The question of why some women are relatively well and happy all the time throughout their adult years whereas others are relatively unwell, unhappy and discontented, is not so easily answered. The family histories of the two groups of women were not notably different. It could not be discovered from the medical history that the group of well women had parents who were either more healthy or more long-lived than those of the ill group. Nor were the childhood experiences of these two groups entirely different. Most of the well women had had a good deal of security and happiness in childhood. The same was apparently true of some of the ill group; but some women in both the well and the ill group had been through notably difficult childhood experiences. It has been pointed out that the one obvious differentiating factor in the two groups lay in the fact that the women who were ill were dissatisfied, discontented, unhappy and resentful at their lot in life and that throughout their working years they were loaded with outside responsibilities, worries and frustrations with which the well women were not burdened.

Searching for a physiological explanation for these parallel phenomena of unhappiness, illness and inability to get along with others one may assume either that the ill group were people with innately less adaptability than those in the well group, or that something happened to the women in the ill group to render them subject to many bodily disturbances, and that this had not happened to the well group. The latter appears to be the more likely explanation. During the course of the past 15 years an increasing body of medical evidence has indicated that many types of bodily disturbances may occur as a part of an individual's adaptive response to events and situations in his external environment. Physiological and experimental studies have confirmed the great importance of such adaptations to life stress in producing dysfunctions of the gastro-intestinal tract, both upper[8] and lower,[9] in cardiovascular disorders,[10] in headache,[11] vasomotor rhinitis,[12] sinusitis,[13] changes in bronchial secretion and bronchial asthma,[14] in metabolic disorders such as obesity,[15] diabetes[16] and hyperthyroidism,[17] muscle tension,[18] and urticaria,[19] as well as others.[10] At the present time there is no unequivocal evidence to indicate that increased susceptibility to infection is a concomitant of chronic exposure to life stress, but present experiences with the effects of ACTH and the adrenal steroids on infection, as well as clinical impressions of long standing, would suggest that this may be true. Likewise, the evidence that disorders of the eyes (except glaucoma), of the teeth, the urinary system, the joints, and the functions of the female genital tract may be seriously affected by adaptions to life stress, remains a clinical impression without much experimental evidence in support. However, one might reasonably expect that these systems would take part in bodily adaptations in the same manner in which other systems participate. While these medical and physiological data have been accumulating, parallel investigations in the realm of psychiatry during the past 50 years have produced increasing amounts of evidence that the disturbances of feeling-state, thought and behavior which are commonly known as the "psychoneuroses," or "psychoses," are also in large measure the result of the individual's attempt to adapt to various forms of life stress. Studies of the frequency of accidents among various groups of industrial employees have suggested that "accident proneness" is the result of disturbed adaptive reactions also.[20]

Therefore, it would appear that that group of individuals who are chronically exposed to life stress is the group in whom most of the illnesses will occur, and who will present the most difficult problems in inter-personal relations, and administration. As far as industry is concerned, it is apparent that certain steps may be taken to deal with these people for the mutual benefit of both employer and employee. The individual with a high illness and absence rate, with difficulty in inter-personal adjustments and in adaptation to office routine can be recognized soon after his employment. Early in his employment career a suitable assessment can be made not only of his physical condition, but also of the

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factors operating in his life to create stress for him. It can be determined whether the problems which he faces and the attitude with which he faces them are such as to make it likely that he will be a happy and productive employee, or whether perhaps he might better seek some other position in life. Likewise, various arrangements can be made with regard to his position, supervisors, location of work and type of work so that he will be able to attain his highest level of productivity. It is evident that such an early assessment of employees and arrangements to enable them to exploit their highest potentialities would be beneficial to all concerned. Such a course is especially desirable in industries in which the term of employment can be expected to be long, and where tenure of position and sickness benefits are provided for. Among employees who have been on the payroll for a long time and who have family and financial responsibilities of an important nature, it is quite obvious that every effort must be made to ameliorate the stresses to which the employee is exposed, insofar as these stresses pertain to employment and are within the reasonable potentialities of management. The alternative is obviously one of continued absence and poor performance to the detriment of the employer, and continued illness and ill health to the detriment of the employee.

In the broadest sense this problem is a problem for society as a whole. Most of the stresses operative in the lives of these individuals were related to their position with regard to their family constellations and the groups of which they were members, and to the attitudes and feelings which they brought to their present life situations as determined by their earlier life experiences. It is obviously not the function of industry to set up a program of social and medical care designed to solve the personal problems of its employees. Nor, on the other hand, would it be reasonable to expect that industry can summarily or methodically dismiss from its employment that group of individuals who are struggling under difficulties and are ill much of the time. The present study indicates that these individuals may represent as much as a third of the working population. This third is not solely made up of individuals who are foolish, inept, or poorly motivated. Many of these people are performing according to the highest moral tenets of our society. They are people who are attempting to care for ill relatives, to educate children, to pay off debts, or otherwise to meet those standards of behavior and achievement which are so valuable to the group as a whole. To set up any program designed to eliminate them from employment would be immoral in the largest sense, and would unquestionably not be tolerated by society in general. It seems quite clear that the only final answer to the problem of the ill person will lie in the furtherance of medical research having to do with the sociological, psychological and physical factors associated with the stress diseases. Bearing in mind the munificent rewards which have accrued to industry from its support of research in the fields of physical science, one cannot help speculating that equally munificent rewards in terms of increased productivity, decreased absence, increased morale and effectiveness of all workers would also accrue to industry if there were an equally generous support to medical science.

Conclusions

1. A STUDY was made of the absences of 1,297 telephone operators throughout their working careers. It was found that in any one year the distribution of absences in the group was such that the greater proportion was caused by a small proportion of the employees. This was true both in terms of total days absent and in terms of number of times absent.

2. It was found that the same employees fell into the high absence and low absence group throughout their entire period of employment. For the group, the relation between absence in the first year of service and total absence throughout subsequent years of service showed a high positive correlation.

3. Three hundred and thirty-six of the employees in this group had had 20 or more years of service. From these 336, 20 of those with the greatest total amount of absence and 20 of those with the smallest total amount of absence were selected for intensive study.

4. Critical review of the medical records of these two groups indicated that the 20 women with high absence had had frequent minor illnesses pertaining to all bodily systems; and that they had had a large number of major illnesses pertaining to all bodily systems. They had had frequent and prolonged minor disturbances of feeling-state, thought and behavior, and a large number of major disturbances of this nature. They had had frequent minor injuries and a large number of major injuries causing lost time from work. They had had a large number of surgical operations, both major and minor. The women with a low absence rate, on the other hand, had had relatively few and scattered illnesses in all bodily systems, and very few major bodily illnesses. They had had few and minor disturbances of feeling-state, thought and behavior, and no major disturbances of this nature. They had had relatively few minor injuries leading to little lost time, and few major injuries. They had had few surgical operations.

5. The 20 women with a high absence rate were as a group discontented, unhappy, difficult to get along with, and difficult to supervise. The 20 women with a low absence rate were as a group contented, happy, easy to get along with, and easy to supervise. For the entire 1297 employees it was found that general attitude and ability to get along with others in 1950 had a positive correlation with attendance in the first

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year of service, however long ago that might have been.

6. It was found that the 20 women with a high absence rate had been exposed throughout their period of employment to life situations and experiences which were to them stressful; whereas the 20 women with a low absence rate throughout their period of employment had been exposed to relatively few experiences which they had interpreted as stressful.

7. In this group of telephone operators, absenteeism, bodily illness, psychological disturbances, poor attitudes and administrative problems were concentrated in those members of the working population who were having difficulty in adapting to the situations and experiences to which they were chronically exposed throughout their period of employment.

(140 West Street.)

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The Case Against the Income Tax

THE great weight of the burden of the average taxpayer has come to be recognized by the medical profession as a definite mental oppression upon many of our people. In a quiet, homey talk with an eminent physician recently, he stated that many psychopathic cases can be laid at the door of the income-tax laws. Frustration, discouragement, and the inability of people, he says, to accommodate their minds to these oppressive and dictatorial laws bring them to the verge of "cracking up." Often members of their families literally have to drag them to competent medical advisers. Then starts a long and protracted fight to restore their health. In truth, he said, it is difficult even for the stolid, sturdy individual, let alone the weak and the sick, to withstand the pressures brought upon them by the government.

—From "Man to Man," by BERNARD N. WARD, C.P.A., The Caxton Printers, Ltd., Caldwell, Idaho, 1952.

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The Rehabilitation Process in Workmen's Compensation Injuries

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THE purpose of this discussion of the rehabilitation of serious industrial injuries is to point out what we feel has been accomplished by a workmen's compensation carrier in setting up a definite program to cooperate with the medical profession.

The history of workmen's compensation in the United States shows that there has been a gradual increase in the amount of benefits payable and in the length of time for which those benefits are payable. The earliest laws which were passed in the 1911 and 1912 period provided for maximum weekly benefits as low as $10 with maximum amounts for permanent total disability limited to a few thousand dollars. Medical benefits were even less generous. The Massachusetts law, for example, provided medical payments for only a two-week period. Under such laws little incentive or money was provided to accomplish rehabilitation in serious injury cases. During the intervening years the amounts for maximum weekly indemnity have been increased in all states. Likewise, the period for which both compensation and medical benefits are payable has been substantially increased. At the present writing there are some 21 Federal and state compensation laws which provide for the payment of compensation for life in permanent and total disability cases. In 35 of the laws medical benefits may be awarded for as long as they may be needed even if for a lifetime.

These changes have produced incentives to restore workers to their maximum usefulness, not only to avoid cases of permanent total disability and to reduce in other cases the extent of partial disability, but also to reduce the percentage in permanent ratings through the reduction of permanent loss in body parts. Increases in the extent of medical benefits now provide sufficient sums for payment of the cost of physical rehabilitation under most laws.

The Liberty Mutual Insurance Company made early and successful efforts to restore injured workers to employment during the period of limited medical benefits by operating outpatient clinics which provided treatment beyond statutory limits without charge to injured employees of its policyholders. By the early nineteen-forties the company had decided that the time was appropriate to establish definite facilities to aid in the rehabilitation of seriously injured workers.

Examination of many cases of long-term disability disclosed that although the reasons for such disability were multiple, they did form a pattern of causes that we felt could be relieved by some of the new developments in medicine if properly applied. A substantial number of the cases had not made early progress toward recovery, owing to complications in the traumatized or fractured part, or to complications of the injury being superimposed on some previously existing bodily ailment.

In studying these causes of disability it often seemed evident that intensive diagnostic study needed to be applied earlier in some adequate hospital or clinic facility, and that the diagnosis and treatment must apply to the man as a whole as well as the injured part. The action we have taken to move up on this problem has been to enlist the aid of consulting specialists in some 35 of our larger industrial communities to act as medical advisers in a review of progress being made on all cases of serious disability. Because these are most often cases of fracture or other trauma, we have utilized the services of orthopedists with special experience in traumatic work. They are asked to review medical histories, to consult with treating physicians, and to recommend diagnostic work or technical procedures that may be in the best interest of the patient. This is in no way aimed at removing cases from the care of treating physicians but is directed at giving the physician any assistance we can provide. These reviews may confirm the treatment or they may reveal the need for further x-ray, laboratory, or diagnostic studies. It is a process of determining what a problem case needs and then offering to provide it, whatever or wherever it may be.

The study of serious disability cases revealed a second large group that had progressed well through surgery and surgical healing, had been discharged from the hospital as cured, and yet months or even years later the individuals had not returned to any form of work. Again the causes were multiple, but still they formed a pattern of continued disability due to stiff joints, atrophied muscles, fear of recurrent injury, lack of confidence, or combinations of residual disability superimposed upon some previous ailment.

STUDY of existing facilities for physical restoration in the United States and Canada convinced the company that a service combining diagnostic study with physical restoration could do much to assist treating physicians to rehabilitate many of this latter group of cases. To provide a place where such a service could be carried out our first rehabilitation center was opened in Boston in June, 1943. Subsequently, a second center was opened in Chicago in January, 1951. These centers have consulting staffs of physicians qualified in orthopedics and experienced

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in the field of trauma. They examine all cases on admittance in order that the exact condition of the injury may be known and rehabilitation therapy correctly prescribed. Also on the staffs are physicians qualified in internal medicine. Each patient has a chest study, together with a complete physical examination, supported by any laboratory studies that may be indicated, in order that the staff may deal adequately with ailments which might complicate recovery. The full-time staffs of the Centers consist of physical therapy and occupational therapy technicians as well as prosthetists and trained counselors. The equipment for treatment includes examining rooms, routine physical therapy and hydrotherapy devices for the application of heat, and many standard types of machines to provide physical therapy exercise. The Centers also contain well-equipped workshops and departments of recreational therapy where graduated exercise can be carried out under the supervision of occupational therapists, where work tolerances can be observed and developed until actual work ability has been attained. The pre-vocational undertakings are selected to fit the patient's interest, to encourage him to re-establish his confidence, and to harden him to actual work ability.

Because our Chicago Rehabilitation Center has been in operation only one year no statistics have as yet been developed. An exhibit from our Boston Rehabilitation Center, however, reveals the following information:

A STATISTICAL STUDY OF 2079 CASES
(Through December, 1951)

Males	1732	Average Age	42.9
Females	347	Average Age	44.8
	2079		
Average length of time from injury (or surgery) to admission			6.5 Mos.
Number of treatment days including examinations			87,652
Average treatment period including examinations			42.1 Days

RESULTS

Number of cases improved by treatment	1747	84%
Number of cases not improved by treatment	332	16%
Total	2079	100%

Of the 1747 cases improved 1165 (or 67%) were restored to work ability.

PHYSICAL RESTORATION

Number of cases complete physical restoration	138	7%
Number of cases partial physical restoration	1609	77%
Number of cases not physically benefited by treatment	332	16%
Total	2079	100%

Because the company's long experience in the handling of compensation cases revealed that comparatively few amputees had mastered the use of artificial limbs, we included in our Centers a service for amputees. This service is conducted under the guidance of physicians experienced in problems of the amputee, with the assistance of trained prosthetists. When problems of stump shrinking, flexion deformities and muscle weakness have been adequately solved, guidance is given by the prosthetist in the selection of an artificial limb that will best suit the patient's circumstances and the kind of employment which is contemplated for him. Once the selection is made, careful measurements are taken and the limb is then manufactured to suit the size, weight, posture, etc., of the individual. The completed limbs are carefully fitted and the amputees are then taught to use their limbs correctly. This is carried out in such precise fashion that, even in the case of bilateral arm and leg amputees, they are taught to be entirely self-sufficient. This includes the ability to put on their limbs, make their toilets, dress themselves, eat, travel on public transportation, drive cars, and use the tools of their future employment. Virtually all employees who have used these services wear their devices successfully, and three-fourths of those who have completed training have returned to remunerative employment, including men who have lost both legs above the knees and men who have lost both arms above the elbows. Significant statistics on the amputee program at the Boston Center are as follows:

AMPUTATIONS

	No.	No. Returned to Work
HAND AND ARM		
Hand amputations	15	12
Single below elbow	54	46
Double below elbow	4	4
Single above elbow	33	24
One above elbow—one below	1	0
Double above elbow	2	2
FOOT AND LEG		
Foot amputation	1	0
Single leg below knee	17	11
Double below knee	2	2
Single above knee	22	13
Double above knee	4	2
One above knee—one below	1	0
	156	116

Although a substantial number of the cases treated at the Centers are able to return to remunerative employment a minority group do not accomplish that good end result. This is because fixation of disability can not be overcome, complications of bodily disease can not be cured, or, in the case of some older patients, the desire to return to work can not be stimulated. In some cases where a substantial permanent partial disability persists they are referred to various types of vocational re-education. Some are referred to state departments of vocational rehabilitation and others to private schools for specialized training. In all of the more serious injuries we find that guidance by trained counselors is essential. This is because an over-all program must be carried out to accomplish not only the employee's return to work but also his adjustment on the job to safe, productive and permanent employment. Our research has demonstrated that the creation of a program is in itself more important than any one of its component parts. The performance of a critical surgical operation or the fitting of an artificial limb may be of vital importance when provided, but if

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no plan is carried out to prepare the man for a job and adjustment to it, his rehabilitation is a failure.

To carry out coordinated programs and to do the counseling and guidance so necessary to their success, we employ degree nurses and train them to become counselors. We call them rehabilitation nurses. Their duties start in an individual case as soon as a critically injured worker has sufficiently recovered from the shock of his injury or surgery to be ready to consider his situation. Working with the doctors, the nurses undertake to obtain the full cooperation of the patient and his family in a planned program. This covers, of course, any necessary hospitalization and surgery, physical rehabilitation, vocational re-education, with an actual job offer as the ultimate goal. The man is told the whole score from the beginning as to what his benefits are to be and the rehabilitation program that is to be offered. Answers to many personal and family problems have to be found, and often a great deal of cooperation on the part of the employer must be secured. Unless the rehabilitation nurse can secure the confidence and cooperation of the patient and can coordinate all of the necessary steps that have here been described, there is no rehabilitation.

REHABILITATION is, therefore, *the program* with each of its component parts successfully carried out. This fact seems little understood in current discussions on the subject of the rehabilitation of handicapped people. All too often the isolated parts of what should be a program are referred to as rehabilitation. We believe that when this concept of the necessity of complete programs has been adopted and private and community services have been established to provide all of its component parts, successful rehabilitation in compensation cases will then become a common practice. It is also the personal opinion of the writer that herein lies the method to remove a great deal of the controversy that exists in the compensation system. We have proved that it can be done by private enterprise. Everyone gains: the nation, the employer, the insurance carried and, most of all, the injured worker.

"Tax and Tax; Spend and Spend; Elect and Elect"

THE TAX Foundation, a private research group that keeps an eye on government spending and taxing, has figured out the load of hidden taxes on hypothetical families in several income brackets. All have the same number of persons (3.2). Here are the Foundation's findings: ON a $3,500 income, the family pays out $798 in hidden taxes—$249 to merchants and manufacturers, $302 in retail sales and excises, $140 for social security, and $108 in realty and minor taxes. The family's income taxes, incidentally, total only $299. ON $4,500, hidden taxes come to $1,039; income taxes, to $455. ON $7,500, hidden taxes total $1,932; income taxes, $869. ON $15,000, hidden taxes come to $4,012; income taxes, to $2,606. What with today's visible and invisible taxes, the era is clearly past when a man can hope to get rich on savings out of his salary. Even maintaining a stable standard of living has become no mean feat. The man who has three dependents and earned $5,000 before the war needs $11,800 to live on the same scale now. If he made $25,000 in 1939, he will have to pick up $98,000 this year to live as well as then. And if he is a man who was in the $100,000 class in the prewar days, he'll have to bring home a million now. For the single man, the job of keeping ahead is even tougher: the man who earned $5,000-a-year before World War I, now needs $13,500; the $25,000-a-year man has to make $230,000; and the $100,000-a-year man, $1,040,000. Here's how taxes eat into raises under the present set-up: For the $5,000-a-year man, each new dollar really brings in only 75 cents (until he moves up into a higher tax bracket, where he gets even less). This is about five cents less than it would have netted him three years ago. For the $25,000-a-year man, each new dollar nets 60 cents, about 9 cents less than three years ago. For the $100,000-a-year man, each new dollar nets 23 cents, 12 cents less than three years ago. Is there any chance of relief? *The only real hope of cutting taxes obviously is to reduce government expenditures.*

—*Ohio State Med. J.*, June, 1952, quoting *Newsweek*.

TAX FACTS

Here's how direct and hidden taxes—state, local, and Federal—hit everyday items in a typical U. S. community:

	Real Value	*Taxes*	*Price*
Cigarettes	$ .09	$ .12	$ .21
Bread	.09	.05	.14
Milk (qt.)	.14	.09	.23
Beef (lb.)	.58	.32	.90
Gasoline (gal.)	.12	.14	.26
Phone (month)	6.60	2.95	9.55
Liquor (fifth)	1.05	3.35	4.40
Coal (ton)	9.00	15.00	24.00

Incidence and Types of Human Relations Problems

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IT IS difficult if not impossible to furnish exact figures as to the incidence of problems in the area of human relations that come to the attention of the industrial nurse. All problems of illness involve some degree of attention to human relations, and it would be artificial to attempt fine distinctions between psychological and emotional factors on the one hand, and physical or medical disorders on the other. It is obvious that these aspects of the industrial nurse's work are inseparable. Too often the nurse's skill in the area of human relations is merely taken for granted, and she is not always given the credit she deserves for her ability to influence personality factors.

In general it can be assumed that approximately 10% of any population group will have rather definite mental or emotional disturbances when they come to the attention of the physician or medical clinic. Even in these cases the psychological factor may be hidden because of some co-existing or associated medical problem which demands prior attention. Available government statistics which show a gradual increase in the category of "diseases of the nervous system" in industry, tell only a small part of the whole story of human relations as it unfolds in the day-to-day work of the industrial nurse.

Not all individuals with nervous or emotional difficulties necessarily have serious adjustment problems on the job or require extensive attention from the medical department. Not infrequently individuals with severe neuroses continue to be excellent employees. Occasionally one even sees old cases of dementia precox in the adjusted phase doing satisfactory work on simple, repetitive jobs. On the other hand there are occasional key employees such as research workers who demand a disproportionate amount of consideration from the physician and the nurse.

Another fact to consider is that reliable studies have shown that some 20% of employees are not doing satisfactory work so far as optimum efficiency and productivity are concerned. These, too, constitute human relations problems for industry, and many of them are seen frequently in the medical dispensary. How far should medical services be expected to go in such cases? It should be apparent that the problems presented by the 20% group and by the neurotic employees, whether as valuable as an atomic scientist, are deserving of much more study than has been applied to them. Suffice it to say that practically all of them come to the attention of the industrial nurse sooner or later.

The nurse who is well aware that she must treat personalities as well as diseases is constantly on the lookout for ways in which she can increase her skills and insights in dealing with problem people. One approach that will help her recognize individuals needing special care is through the use of more accurate personality appraisal techniques. The nurse often has more frequent contacts with employees than the physician, hence it is important for her to take personality factors into account from the time of her first contact with applicants for jobs.

THE personality appraisal the nurse makes should include the following: (1) Appearance; general manner and behavior, dress, physique (pyknic, athletic, or asthenic, or combinations of these three basic types), facial expression, voice and conversation. (2) Intelligence as judged by the individual's response to the demands of the interview, his schooling, vocabulary, and use of language. (3) Emotional reactions observed during the interview and in response to situations of stress. (4) Attitudes in relation to health, physical handicaps, social relationships, acceptance of authority (supervision), and persistence on the job.

Attitudes are often more important than skills in indicating how a person will perform in a given work situation. The individual with a neurotic attitude toward his health, for example, will require three or four times as many dispensary visits as average employees. Attitudes toward authority are particularly important in industry because the individual tends to assume the same attitude toward the foreman that he has been conditioned to make toward his father and later toward his teacher in school. Hostility and resentment toward management as an outgrowth of the individual's early childhood experiences can result in costly personality clashes on the job. The discerning nurse in industry is in a strategic position to understand and relieve some of this tension. She knows that employees do not check their emotional and mental equipment and habitual reactions in the locker room before starting work. The stress of working under certain supervisors may bring such potential maladjustment to the surface. Handling such individuals on the job, of course, requires more than merely telling them their attitude is wrong; counseling techniques are necessary.

Other factors in the personality appraisal

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which the nurse should note are: (5) maturity; (6) temperament; and (7) character. Immature employees respond much as children do. They may have more minor difficulties on the job, and they tend to have more absenteeism. Their emotional reactions tend to be excessive, and hence they run into more personality clashes. Immature women have a tendency to take more time off for menstrual discomfort than is average for other women employees. Temperament and character are of course more difficult to evaluate, and the nurse would be wise to suspend her judgment concerning these factors until she has had sufficient opportunity to observe the individual over a considerable period of time.

Ordinarily the medical record on applicants for work does not include much in the way of a personality examination, and yet as a matter of fact this is more frequently the real cause for rejection. When such questionable individuals are hired, the personality factor again causes more difficulty than physical illness which may or may not occur. During the last war Dr. Fulton found that employees who at time of hire appeared arrogant, distrustful, evasive, irresponsible, sullen, or showed self-centered, "smart-alec" characteristics, later took up as high as 80% of the services of the personnel and medical departments. Although these personality characterizations were extremely brief, they nevertheless picked out the most troublesome individuals, considered from the standpoint of human relations. This is shown by the fact that their absenteeism was two and a half times as great as a large control group of employees; the work days lost for personal reasons were twice as great; and the number of medical complaints was increased three-fold over other employees. Accidents and shop rules violations were more common among these individuals, and they turned in a higher proportion of grievances. In addition, it was found that all of these problem tendencies were even higher after the employees had passed the first six months probationary period and achieved seniority.

As Dr. Fulton clearly has pointed out, 20% of employees who are industrially sub-standard use up 80% of the time and services of the personnel department. This, of course, includes the time of the nurse who is often forced to see them over and over for insignificant medical complaints. Industrial nurses, like all workers in the field of industrial human relations, would prefer to give more of their time to the 80% of good employees who show the greatest response to interest in their welfare. If management is unwilling to spend more than the barest minimum for medical care, the harassed nurse can give neither the minority nor the majority the necessary and proper service. Such curtailment of care invariably results in the compounding of human relations problems.

In industries where the nurse has an active part in the employment process, her ability to make adequate personality appraisals is of outstanding importance. In addition to the personality study, an employment interview must also take into account certain long-range factors in the applicant's life, such as his health record, his education and training, his previous work record and experience, and his social background. If these five factors are combined with the interviewer's final over-all opinion as to the applicant's suitability for a particular job, the acrostic word "PHEWSO" emerges. This term makes it easy to remember the main areas of inquiry in conducting an employment interview.

The industrial nurse has a closer relationship and in some instances more frequent contacts with the employee than anyone else in the human relations field, even including the supervisor and physician. Through the unique and confidential nature of the medical relationship, she has a tremendously important opportunity to influence employees, their attitudes toward supervision, and their feeling for others on the job. Her psychotherapy consists of listening to their adjustment problems, giving them reassurance and the feeling that there is someone who is professionally interested in their comfort and their success. The nurse similarly has opportunities to talk to supervisors, many of whom feel as insecure and as anxious to confide in someone they can trust as the men who work under them.

The nurse who individualizes her interest in each patient has already gone a long way in applying the spirit of constructive human relations. The atmosphere of permissiveness which she creates makes it possible for the patient to tell his story as he sees it, and to say things he could not otherwise bring himself to reveal. When such treatment for mental and emotional tensions is carried out along with care of physical aspects the nurse has a double opportunity for healing the individual. But it should be emphasized that she cannot carry out work on this level in a crowded, understaffed medical department where there is no room for privacy and confidential talk.

As has been mentioned, the nurse's services in the area of human relations are intangible, not readily translated into financial statements or increased production, but there can be little question about the beneficial effect of her personality and her attitude and her techniques on the over-all morale of an industrial plant. Interest in people as human beings which radiates from her and from the rest of the medical department becomes a felt influence throughout the organization, and sets up an ideal for human relations not only between other individuals but also between whole departments. Effective as the quiet, indirect, unheralded influence of the industrial nurse is, it cannot survive without the full support of management and the Medical Director. She too must have encouragement and incentives if she is to make even greater contributions to the field of human relations.

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How Human Relations Problems are Dealt with by Medical Directors, Physicians, and Nurses

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THE KEY to the art of producing good human relations is gaining the confidence of the rank and file of people as *individuals*. Nurses are an important factor in this production. The most important tool with which to gain this confidence is "keeping the medical department in a neutral zone." The profession cannot serve two masters—employer and employee. The individual employee, as a patient, is the primary master. It is wise management that upholds this policy. We must have and hold this confidence before we can even make a start toward tackling this troublesome subject of human relations, about which we know so little.

From the viewpoint of the average plant physician, and the average industrial nurse, some observations and simple measures for identifying human relations problems will be presented.

The first essential is a good record. Form the habit of making a note of any observation that you make. Record the observation at the time; do not wait. Take that extra moment in which to do it. You cannot depend on a memory. Possession of such records, as a source of repeated reference, will sharpen your thinking and your judgment, yield data for research, and, in time, indicate how good or how bad you are.

TABLE I.
ANALYSIS OF RECORDS AND OBSERVATIONS

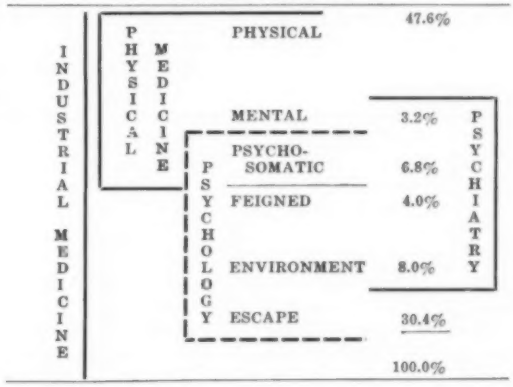
Accidental Injuries and Medical Complaints:	
80 to 85% are produced by	30% of the employees
15 to 20% are produced by	60% of the employees
0 to 5% are produced by	10% of the employees
Individual Minor "Sick" Absences:	
60 to 70% are produced by	20% of the employees

Table I is a summary of repeated analyses of such records and observations over a long period of time. It represents the average daily case load of a medical department in industry. You are all familiar with the daily procession of the injured, the sick, and the absentees returning to work. Note that from 80 to 85% of all the injuries and sick complaints are produced by only 30% of the employees, and that from 60 to 70% of the individual minor (less than eight days) absences, attributed to sickness, are produced by 20% of the employees.

These percentages remain constant, and the individuals within the percentage groups (with few exceptions) remain the same year in and out. The majority of all human relations problems arise in the 30% group. It is in this group that we find the preponderence of radicals, indigents, neurotics, and otherwise below par brothers. We must conclude that the human factors, not the physical, play the important role in accidents, degree of efficiency, and general human relations. Hence, we here see that analysis of the medical records will roughly screen out a 30% area which contains a majority of those individuals who present human relations or, let us say, personality problems.

LET'S LOOK at the panorama of Human Relations with which the industrial medical department deals (Table II).

TABLE II.
THE HUMAN RELATIONS OF INDUSTRIAL MEDICINE—CONTACT ANALYSIS



This is an analysis of the real causes that bring employees to the medical department. All visits are, of course, initiated by some physical complaint, genuine, alleged, or feigned. These employees may come of their own volition, or are referred by supervision. A true physical cause is found in only 47.6% of the complainers. The scope of physical medicine takes in those cases classified as Physical, Mental, and Psychosomatic, the three of which form 57.6% of all. Generally, this covers the field for which the average medical and nursing education furnishes training. The specialty of Psychiatry overlaps two classifications within physical medicine and may be involved to some extent in two others, namely, Feigned and Environmental. The potential involvement of Psychiatry amounts to

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22% of all. The classification of 4.0% of cases as "Feigned" represents those individuals who know that they are faking, malingering. Many of them are the negative type of personalities. The broad term, Psychology, overlaps both Physical Medicine and Psychiatry, and is potentially involved in 49.2% of the total. The 30.4% classified under the rather vague term "Escape" cover those many human urges to stop work and talk to somebody. They say they have a headache and come to the medical department, primarily to talk. This is the broad field covered by medicine and nursing in industry. You are almost in the position of general practitioners of a number of specialties.

Now, as to the possibilities of identifying personality problems during the pre-employment examination. Beginning in 1935, my staff was encouraged to form the habit of immediately recording any deviation from the so-called normal. The fact that industrial medical personnel come in contact every day with a tremendous number and variety of people, affords them the opportunity of becoming sensitive to these even slight deviations.

Here are some samples of those recorded observations that were made by physician, nurse, or clerk during the pre-employment examination:

(a)—Very talkative. Boastful type?
(b)—Whistled and hummed throughout the entire examination. Hand gesture constant. Compulsion neurosis?
(c)—Apathetic response. F.N.B. (Finger nail biter).
(d)—Army reject—4-F "nerves." Somewhat resentful type?
(e)—Seems quite nervous—talkative.
(f)—Quietly skeptical.
(g)—Mental reflexes seem slow.

It may well be believed that almost everyone can recall persons who have impressed them in all of these few ways—but none wrote it down at the time. These notes are not the result of any extensive analysis. They are only descriptive surface reactions or impressions, gained in contacts lasting not more than six minutes. Note the question marks after several of them. The physician and members of his staff are not making a diagnosis. There was no specific purpose in these recordings. In fact, it was not until seven years later that I remembered them. In 1944, I was stimulated by Dr. Selby to take part in discussing the broad subject of Psychiatry in Industry.[2] In search of a possible subject, an analysis of those employees whose records bore these types of notation, was instituted. The result was an unpublished paper, to which Dr. Himler several times has referred. Dr. Himler designates it "as Dr. Fulton's work." Not at all. It is the work of my team members, the nurses who faithfully recorded and stored the data that made the work possible. Any industrial physician, or nurse is capable of making these brief notations, these descriptive impressions, that set an individual outside of the so-called "norm."

Here are some of the findings in this analysis (Table III):

TABLE III.
ONE YEAR RECORD

	Injuries	Sick Complaints	Individual Sick Absences	Total
3200 Employees Used as PAR				
Per Capita Average	7.58	7.42	3.75	18.75
	100.00%	100.00%	100.00%	100.00%
Those having Psychiatric Notations				
Per Capita Average	14.56	12.40	5.60	32.56
	192.08%	167.11%	149.33%	173.65%

The medical records for all employees shown cover an identical time period. The total number of accidental injuries, sick complaints at work, and individual sick absences is reduced to a per capita rate for the one year period.

Across the top line appear the per capita rates of a large number of all types of industrial employees. These rates represent the 100% base line used as par.

Compare these par rates with those in the line below. They are the per capita rates of the group of employees who have personality notations, broadly termed "psychiatric," on their original pre-employment examination records.

TABLE IV.
PERSONNEL DEPARTMENT RECORD

Psychiatric Group Personality Notation on Original Physical Examination				Control Group No Personality Notation on Record		
			Number of—			
		1	Written Reprimands	0		
		8	Disciplinary Lay-offs	1		
		197	Times Absent	136		
		101	Times Late	106		
		307	Total	243		
Ratings				Ratings		
Above Av.	Av.	Below Av.	Work—	Above Av.	Av.	Below Av.
2	21	1	Quality of Work	4	19	1
3	19	2	Quantity of Work	6	15	3
5	12	7	Dependability	9	7	8
3	19	2	Good Housekeeping, etc.	3	19	2
13	71	12	Total	22	60	14
			Attitude Toward—			
	21	3	Company Policies	3	21	
1	21	2	Fellow Workers	4	20	
1	20	3	His Work	6	18	—
2	62	8	Total	13	59	
15	133	20	Grand Total	35	119	14

TABLE V.
SUMMARY OF PERSONNEL DEPARTMENT RECORDS

Psychiatric Group				Control Group		
9			Number of Disciplinary Lay-offs and Reprimands	1		
298			Times Absent or Late	242		
Above Average	Average	Below Average	Ratings	Above Average	Average	Below Average
13	71	12	Work	22	60	14
2	62	8	Attitudes	13	59	0
15	133	20	Total	35	119	14

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Their per capita rate is 92%, 67%, and 49% above par in accidental injuries, sick complaints, and sick absences, respectively. Hence in their total medical contacts they rate almost 174% as against the 100% or par for the over-all employee population.

The personnel department records of a number of those employees who have personality notations on their pre-employment examination are compared with the records of an equal number (picked at random from the files) who do not have such personality notations. The total result of this analysis is shown in Table IV; the summary in Table V.

It is significant that there are seven individuals in the psychiatric group involved in nine Disciplinary Lay-offs and Reprimands, against only one in the control group.

Attitude Ratings, which are important, reveal eight below average ratings in the Psychiatric Group, none in the Control, while there are 13 above average ratings in the Control Group and only two in the Psychiatric. In the totals, we note a preponderance of above average ratings in the Control Group—35 to 15, and fewer below average ratings in the Control Group—14 to 20. We do not infer, nor does this analysis indicate, that every individual in the Psychiatric Group is "bad." To the contrary, a number of them are excellent workers. We call attention to the fact that there are two less below average work ratings in the Psychiatric Group than in the Control —12 to 14. However, the majority of those in the Psychiatric Group are definitely within the 30% group that produce 85% of all hospital attendance, as indicated by the analysis of the medical records. Hence there is some correlation between the medical record experience and the performance of those who carried a personality notation on their pre-employment examination.

Some time ago, each of two power press operators suffered a severe injury. Investigating these two accidents, the Safety Director was told by the foreman that these two employees were rated as fast, safe workers. Unless foremen keep detailed long-term records on their charges (and I know almost none do), little confidence can be placed in the accuracy of their safety ratings. Their appraisal is too apt to be colored by the impression the employee made on them today, yesterday, or at the moment. Let us therefore look up the medical records of these two employees and all other employees performing that same operation.

TABLE VI.
COMPARISON OF EMPLOYEES ON IDENTICAL OPERATIONS RECORD FOR ONE YEAR

	Accidental Injuries	Sick Complaints	Individual Sick Absences	Total	Severe Injury	Psychiatric Note on Original Examination
1	27	14	4	45	Yes	Yes
2	23	31	15	69	Yes	Yes
3	19	4	2	25	No	No
4	14	3	1	18	No	No
5	13	7	1	21	No	No
6	12	2	3	17	No	No
7	10	12	10	32	No	No
8	10	5	11	26	No	No
9	10	3	4	17	No	No
10	5	3	3	11	No	No
11	4	2	1	7	No	No
12	4	0	2	6	No	No
13	2	2	0	4	No	No
14	0	2	1	3	No	No
	10.93	6.43	4.14	21.5	Per Capita	
14	153	90	58	301	Total	

The 14 employees engaged in this work operation are arranged in the order of the number of accidental injuries they have all received over a one-year period. Consistently leading the pack by a wide margin are our two employees who were severely injured. (Compare this list with our par per capita rates of 7.58: 7.42: and 3.75 shown in Table III.) Seemingly a strange coincidence, yet a fact, these two also stand alone in having psychiatric notations on their original physical examination records. Both are members of our basic 30% group.

Taking this group as a whole, the five having the highest total, or 30%, have produced 66% of the total contacts for all 14.

Because of the comparative accident record of the first four, they would be classified as accident-prone persons.

In individual sick absences, the second, the seventh, and the eighth employee, or 21% of the 14, have combined to produce 36 or 62% of the total of 58 sick (?) absences. Here are your absent-prone employees.

Considering the excessive rate of accidents and sick complaints at work of the first two employees, we must admit that the psychiatric note on their pre-employment examination was of some significance.

Two correlated groups have now been identified: (1) the 30% group identified by medical record analysis; (2) the psychiatric group identified by certain notations on the pre-employment examination. A majority of this group are also in the 30% group.

Through records and observation, with no attempt to psychoanalyze, the average industrial medical team has here sifted out an area of their population that contains the potential for creating the majority of the acute and chronic human relations problems. This is case finding on a large scale. You are not waiting for them to show up, you are anticipating and searching for them. The results of these analyses indicate an area in which a great many problems could be prevented.

The performance of those in the psychiatric group indicates a long-range predictive value of the notations made at pre-employment. However, we must not presume to judge our fellow men, and denying employment should never be based on such flimsy appraisals. However, the result of this analysis does strongly suggest the importance of a more thorough excursion into personality appraisal during pre-employment

procedure. It seems that at least *certain* employees in this psychiatric group should be ear-marked for follow-up, study, special attention, or careful placement. Competent psychiatry and psychology with some industrial orientation, would be a tremendous aid in picking out those "certain employees." Both sciences possess the skill to interpret, sort, and classify those "surface reaction" notations, and to indicate those that are most significant. Dr. Himler has already mentioned that these brief personality descriptions generally fall into four categories:[3]

1. Distinctly negative personality reactions.
2. Traits indicating mental disorder or defect.
3. Findings indicative of neurotic tendencies.
4. Miscellaneous and borderline characterizations not directly classifiable.

Records and data such as the foregoing would serve as an excellent starting point for psychiatric and psychologic study. Beginning thus in the area that contains the highest potential of human relations problems, it is altogether probable that a great many could be prevented. The cost saving to industry derived from this type of teamwork could be great.

We do not intend to convey the idea that a full-time psychiatrist or psychologist should be on hand to *treat* these problems. Cases sufficiently acute to need treatment, no more belong at work than do cases of acute appendicitis, and it is not the responsibility of industry to *treat* them.

The majority of the human relations problems that are discovered by or turn up in the medical department can be handled by the industrial nurse or physician. However, some psychiatric training and orientation would undoubtedly enable the medical personnel to do a better job.

What proportion of the employees are included in the psychiatric group? Dr. Himler has placed it between 3% and 4%. Our record of those having notations on their medical record is as follows:

Three separate analyses—from 1935 through 1946 in a manufacturing plant:

1. Both Sexes	3.27%
2. Both Sexes	3.20%
3. All Male	3.12%
Average	3.16%

1947 through April, 1951—in a non-manufacturing location:

1947	2.90%
1948	2.09%
1949	2.66%
1950	3.77%
April, 1951	2.20%
Average	2.84%
Average over 14 years	3.00%

While there is an obvious variation from year to year (note 1950) the average over a 14-year period is exactly 3.00%.

OVER the years, it is curious how often this approximate 3% turns up under other circumstances. If you are observant, you will be surprised at the number of times you will run across it. There may be a correlation between our 3% personality factor and these other circumstances. The two examples that follow are taken from newspaper accounts.

1. Report of the secret vote of the rank and file employees of a large automobile manufacturing corporation, idled by a 100-day strike—May 1950:

"Balloting in the locals ranged from 94 to 98% in favor of the peace terms, or more than 10 to 1. Not one local dissented."

Here we have a range between locals from 2% to 6%. An over-all average of *negative votes of 3.4%*.

2. Story of a vote by rank and file employees of a large publicly owned transit system—to call off a threatened strike—March, 1950:

"An overwhelming vote of more than 30 to 1 to call off a threatened strike—the operators' union, voted by 3,015 to 100 to ratify a contract in which management awarded them increased hospitalization and vacation benefits."

Here we have exact over-all figures and the proportion of negative votes amounts to 3.21%.

It is obvious in the first example that the peace terms were approved, and we can assume that the vast majority were weary from the hardships of idleness and wished to return to work. In the second example, the contract was overwhelmingly approved, and the vote and general circumstances surrounding this episode did not indicate that there were any valid reasons for calling a general strike.

The alarming frequency of this 3% makes one feel that if Jehovah gave a universally understood guarantee of eternal bliss with complete freedom from all pain and evil, and put it to a vote this same 3% would vote against Him.

The same point made in regard to the individuals in our psychiatric group is again emphasized in regard to this group, namely, that we do *not* intend to infer that every individual who cast a negative vote is necessarily "bad." It is probable, however, that these two groups will exhibit identical collective characteristics as employees and as citizens.

It is claimed that this 3% of our population, which sets itself apart from the static "norm," contains the doers—the possessors of boundless drive, rugged individualism, the ingredients of genius and other kinetic attributes. In large part this may be true. However, the way their unusual talents are directed divides them sharply into two classifications:

1. Those whose talents are directed toward beneficence and altruism.

2. Those whose talents are directed toward lawlessness and chaos.

In the first classification, we might find an Augustine, a Mendel or an Edison—quieter, introspective types with little tendency toward despotism.

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In the second classification, we might find an Attila, a Genghis Khan, or a Hitler. As a rule, these are the doers who make a terrific noise with extroversive tendencies. They tend to flock together. As individuals or as a group, they also tend to attain positions of authority and power. It is probable that the surface reactions, the majority exhibit, will fall in the first category, namely, distinctive negative personality reactions.

In what we have chosen to call the "collective pathology of human relations," these types are metaphorically the apostate, the malignant cells of humanity. They metastasize destructively. Sporadic and long lasting epidemics of unrest and many other undesirable states are frequently traceable to them. The variable percentages of these cells within populations, plus the involved genetics over a number of generations, may be the chief etiological factor in bringing about drastic changes in the moral, political, and military history of nations. There is nothing new about the problems posed by this small segment of humanity. They have been with us since the beginning of time, and shall remain until perhaps the millennium brings an Utopia of hereditary perfection. Once upon a time, an oriental ruler was reported to have made the following observations: "It is my sober conviction that the noise made by any party is in inverse ratio to its numerical strength. But, alas! the people are terrified by sounds, and fly in panic before the loud howlers. That is why, in socialistic states, the lunatics and fanatics rule."

In order to discuss the variable proportions of this over-all 3%, we return to our example of the 3.21% that cast negative votes in the proposed transit strike. The 3,115 employees voted from eight different locations or stations. The figures appeared in the daily press. We furnished the percentages:

Station No.	Number Voting	Percentage of Total	Number Voting No		Percentage Negative
1	467	15.1%	5*		1.07%
2	608	19.5%	8		1.31%
3	374	12.0%	7		1.87%
4	362	11.6%	8		2.21%
5	162	5.2%	5		3.09%
		63.4%		33%	
6	401	12.9%	17		4.24%
7	522	16.7%	26		4.98%
8	219	7.0%	24		10.95%
		36.6%		67%	
Total	3115	100.0%	100*		3.21%

*Also percent of total negative votes.

The 3,115 comprise eight stations or groups varying between 162 and 608 employees. In the right hand column, these groups are arranged from above downward in order of the increasing percentage of negative votes that each contains. Note the wide variation in these percentages. Each of the first five stations is below the average of 3.21% negative. Combined, the first five make up 63.4% of the population, and produce 33% of the "no" votes. In contrast, the last three stations make up only 36.6% of the population, yet produce 67% of the "no" votes. The 219 employees in station No. 8, or only 7% of the population, have alone produced 24% of the "no" votes.

There are causes for these wide variations, and it is highly probable that most of them lie strictly within the realm of human relations. A thorough search would uncover most of them. Making the right diagnosis is certainly a challenge, and should be an interesting quest for personnel directors.

THE data we have just presented are analogous to the variations among groups or departments in industry, that you nurses encounter time after time in everyday work. Surely, you have observed departments that seem to be chronic producers of a higher rate of hospital visits than others. You have also witnessed sporadic increases in departments that were heretofore average or below-average rate producers. Analysis of these variations usually discloses that the increases consist chiefly of those contacts that were classified in Table II as Psychosomatic, Feigned, Environmental, and Escape. These variable increases are often the symptoms of some pathological change in the human relations pattern within a department or group. Several of the important questions to be considered in a search for the cause of the symptoms are as follows:

1. Have an unusual number of people with negative personality reactions concentrated in the particular department; or is an unusually aggressive individual of this type affecting the group?

2. What is the quality and ability of supervision in the department?

3. What are the work surroundings; the general working environment in the department?

The principal underlying causes of pathological changes in human relations patterns will, in most instances, be found within the framework of these three questions.

The industrial nurse sees more individuals from all departments more often than any other person. She is therefore in a unique position to observe these comparative changes and, in many instances, to point out the possible cause. She is also in a strategic position tactfully to sow the seed of individual and collective cure and prevention without engaging in personalities, jeopardizing the confidence of her patients, or harming any individual.

LET US now discuss the medical records of a few employees (Fig. 1). This is the medical record of the No. 2 employee in Table VI. This employee had a psychiatric notation on the preemployment physical examination record, and suffered a severe injury. To furnish contrast, a normal or average year record is placed on

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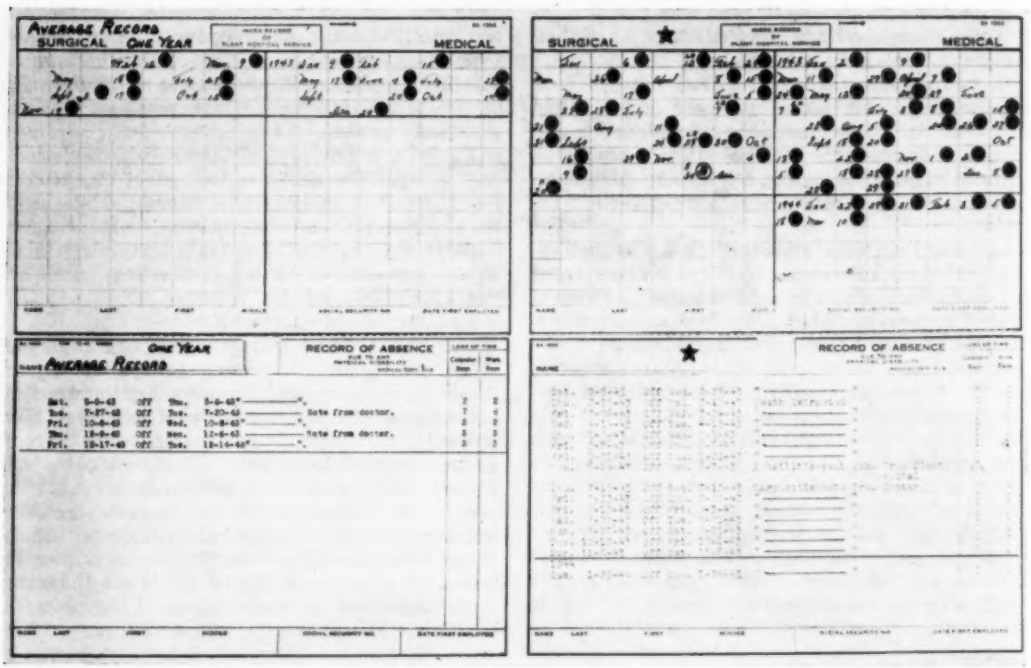

Fig. 1.

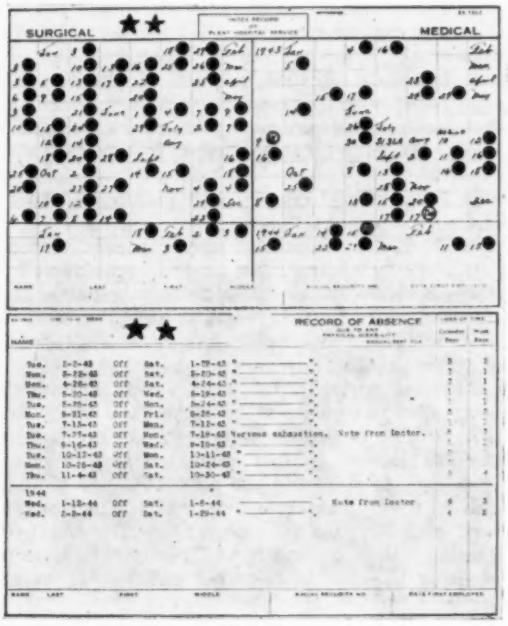

Fig. 2.

the left side. This type of record was devised and used during the late war, as an adjunct to records usually kept in an industrial medical department.[4] As shown here, there are two 5 in. x 8 in. cards. At the top is a bisected card holding in code, on the Surgical side, the record of every new accidental injury, and, on the Medical side, in code, every sick complaint reported during working hours. (The code is omitted and injuries and sick complaints are represented here by solid circles.) Below is the record card of absences due to any physical disability. The absent record is briefed. The use of quotation marks indicates *self* diagnosis without medical attention. The absence of quotation marks indicates professional diagnosis and treatment. These cards are reversable and are capable of holding 10- to 15-year records for the average employee. We called this combined record "the index of individual and collective health and safety." By

TABLE VII.
RECORD OF ABSENCE DUE TO ANY PHYSICAL DISABILITY
MEDICAL DEPARTMENT RECORD

			Loss of Time	
			Calendar Days	Work Days
Tue. 2-2-43	Off Sat. 1-29-43	"....."	3	2
Mon. 3-22-43	Off Sat. 3-20-43	"....."	2	1
Mon. 4-26-43	Off Sat. 4-24-43	"....."	2	1
Thu. 5-20-43	Off Wed. 5-19-43	"....."	1	1
Tue. 5-25-43	Off Mon. 5-24-43	"....."	1	1
Mon. 5-31-43	Off Fri. 5-28-43	"....."	3	2
Tue. 7-13-43	Off Mon. 7-12-43	"....."	1	1
Tue. 7-27-43	Off Mon. 7-19-43	Nervous exhaustion Note from Doctor	8	7
Thu. 9-16-43	Off Wed. 9-15-43	"....."	1	1
Tue. 10-12-43	Off Mon. 10-11-43	"....."	2	1
Mon. 10-25-43	Off Sat. 10-24-43	"....."	2	1
Thu. 11-4-43	Off Sat. 10-30-43	"....."	5	4
1944				
Wed. 1-12-44	Off Sat. 1-8-44	Note from Doctor	4	3
Wed. 2-2-44	Off Sat. 1-29-44	"....."	4	3

comparison, the accident, sick, and absent proneness of our No. 2 employee is obvious. The circle enclosing the "$" mark of December 30 indicates the severe injury received on the power press. Records such as these automatically point out individuals and groups of individuals that merit special attention.

There follows the briefed sick absence record of an employee who, while nothing of a psychiatric nature was noted at original examination, subsequent to hiring exhibited definite psychoneurotic tendencies and complaints. This employee had 55 injuries, 28 sick complaints, and 14 absences in contrast to the average of eight, eight, and four respectively.

Pay particular attention to the day of the week on which these short-term absences started—the "off" date. Read down the column and note the preponderance of Mondays and Saturdays. (Chronic "week-enders.") Here is one of the 20% group responsible for the vast majority (60-70%) of short-term so called "sick absences." The true facts concerning real sick absenteeism are grossly distorted by this group.

These simple records are accessible to the nurses. As the medical contacts are coded, graphic patterns take form that may indicate deficiencies or changes in an employee's performance. Often these deficiencies are registered quite soon after hire. For instance, the average per capita rate of injury is 7.85 per year (see Table III). A clerk or nurse making an entry or inspecting a record will note an employee who has scored four injuries, although he was hired only *five days* ago. This is obviously an extremely high rate. Such a record pattern automatically singles out such an individual for immediate attention of some sort. In this case, safety is primarily involved.

The following record pattern is of unusual interest. This employee was hired on March 27. In his first 15 working days, four accidental injuries were scored on the surgical side of his index record. The code indicates that on April 14, the medical staff called the attention of the safety director to this high accident rate. Beginning the following week, the reaction of the employee is manifest on the record by a tremendous acceleration in medical complaints. The coding of injuries on the surgical side has ceased and on the medical side there begins a barrage of stomach pains, head cold, and "nervous" headaches. Now, the record has singled out this same individual for special attention primarily from the medical aspect. Without going into detail, this turned out to be a human relations problem. This was a case of maladjustment, insecurity, and a desire for sympathy and personal attention. He had found his chief outlet through contacts in the friendly atmosphere of the medical department. Eventually, the record indicated a marked improvement and a return to normalcy.

As a rule, the majority who exhibit personality deviations at pre-employment examinations, begin immediately to register an abnormally high rate of hospital calls. However, it is not until the completion of their probationary period (90 days to six months) that they become high producers of grievances, below average work and attitude ratings.[3]

WE HAVE now talked about a certain group and the individual personalities that are chronic producers of human relations problems. We must not overlook the many problems that suddenly arise in individuals who heretofore were normal, happy, and safe employees. These problems arise from all manner of conditions and emotional responses to stress and strain, advancing age, domestic difficulties, financial burdens, ill health, and a host of others. The first evidence of such problems is often disclosed to the industrial nurse. Most of these are temporary problems, and if promptly recognized and adequately handled, there would be fewer of the permanent variety.

TWO cases in the foregoing category are of interest:

Case 1: A male employee in his middle twenties with an excellent past record began a period of excessive tardiness and absence, for which no reason or excuse was furnished. About a year ago he had moved from another state to accept work in this location. After several warnings, a disciplinary leave of absence was imposed and accepted by the employee, without protest. A subsequent investigation led to this employee's home. It contained a four year old son, a young wife paralyzed from the waist down by a spinal injury suffered in a recent automobile accident, and an elderly neighbor woman who could lend a helping hand occasionally. Team work set in motion agencies which rectified this situation and restored our employee to his former state of efficiency. The amazing thing is—why didn't he tell us about all this? Did his personality make-up contain strong introversive qualities colored with an unreasoning pride and a strong urge toward self pity and martyrdom? This certainly is an example of the vast differences that exist among individuals. How true, that one half of the world doesn't know how the other half lives!

Case 2: A long-term efficient employee, in his middle forties, was well up the promotional ladder. He had made only two visits to the medical department in seven years. The present illness was ushered in by several visits to the medical department in rapid succession. His descriptions of his complaints and symptoms were none too lucid, and there was a tendency toward tearfulness and evidence of hysteria. Psychology and psychiatry teamed with medical and personnel departments during the course of this case. Actually, the employee had been promoted to a position of responsibility beyond his capacity. He was unable to adjust and a psychosomatic syndrome ensued. After medical treatment, he returned to work with the recom-

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mendation that, for the time being, executive assignments be avoided. He is doing well and is in line for a promotion. Had the true nature of this illness been missed, or had some arbitrary decision been handed down, the employer could have lost the services of a valuable employee, to say nothing of the disaster to that employee as an individual.

It is only fair to state that, in both of these cases, it was the industrial nurse who gained sufficient insight to guide them into the channels which promised the best results.

Case 3: A middle aged man with an excellent past record in safety, efficiency, and ability to get along well with others. For some time his operation had consisted of enlarging bolt holes in steel frames with a heavy, motor driven 5/8 in. reamer. One morning he got tangled with this reamer and suffered a severe lost-time injury. When I met his distraught wife at the hospital, I learned for the first time that their only daughter, age 13 years, had been hospitalized the previous evening with a diagnosis of poliomyelitis. Was this injury the result of this father's reaction to personal anxiety and grief? I have always felt that the connection between injury and domestic catastrophe is more than coincidental. Could this employee's personal anxiety have been cushioned and the accident averted by one of those foremen who has the gift of inspiring the employee's confidence in him? Probably "yes!" This type of foreman is apt to notice something different about an employee's "good morning" response, and, on the other hand, an employee is apt voluntarily to confide his personal problem to such a foreman. Had his foreman known, I am reasonably sure that the work assignment would have been different on that morning. If an alert industrial nurse had known, I am just as sure that she would have recognized and done something about the potentialities involved in such a situation.

Case 4: A female employee, age 23, was brought to the hospital with a fracture of her right big toe. She gave this history: "A roll of metal, weighing about 10 pounds, fell on my foot." Later she confessed to the nurse: "It was my own fault, I got so —— mad, that I hauled off and gave that roll a kick!" Funny? Perhaps, but the humor did little for a sore toe. This girl was feeding sheet metal into a press. Twelve-pound cylindrical rolls of this material were stacked near by. Too many times, removal of one roll precipitated a cascade of others. The employee had the choice of stumbling amid the strays, pushing them aside, or doing a restacking job. This had been going on for some time. Perhaps it was on one of those blue Mondays that she reacted so violently. Primarily, this is a human reaction to the immediate working environment. The Safety Director corrected the unsafe stacking of the material. The medical personnel kept the employee's confession confidential.

This case illustrates individual response to work environment; the following case illustrates collective response.

Case 5: The nurse called attention to an epidemic increase in visits from the employees working on the motor assembly line. There were not many injuries, but a rash of psychosomatic complaints broke out. "Nervous headaches, stomachs, vague pains around the heart, etc." Minor surgery was necessary for two of these employees who engaged in a fist fight. It was under these or similar circumstances that an usually complacent worker, without any warning, greeted his generally respected foreman with a punch in the nose. (The worker never was able to give any reason or explanation.) The epidemic ended and things returned to normal when this assembly line was lengthened by an additional 25 feet. The underlying cause of this epidemic was inadequate working space. As the automobile engine moved between two rows of employees, spark plugs, wires, carburetors, etc., were added. A time lag by one employee caused him to move into the working area of those beside or opposite him. There was frequent jostling, stepping on each others' feet, bumping heads when bending forward, and generally getting into each others' way. There just was not enough "elbow room." An occasional bump or jostle is not apt to cause disturbance. However, the above conditions had been a constant day in and day out experience for some time. In this case we are witnessing the result of the summation of minimal stimuli—a staircase rhythm of emotional response that eventually becomes very evident.

Environment plays an important part in producing human relations problems. Instances similar to those just outlined have been cleared up by improving the lighting; brightening the work surroundings with paint; adjusting the height of benches, work tables and other equipment to the height and other physical characteristics of the employees. Once in a while, faulty supervision affects the working environment adversely, causing localized epidemics of human relations problems that are reflected into the Medical Department.

IT SHOULD now be evident that a tremendous volume and variety of human relations problems parade constantly through the Medical Department. To be sure, injury or physical complaints are involved in many, but human relations are the underlying basis of 49% of daily contacts. Industrial medicine, in general, and the industrial nurse, in particular, is the Mecca of human relations problems. This is a great opportunity. You are a sounding board for individual and collective morale in the plant. You are in the position of being the first and often the only agency to detect the symptoms of unrest. While there is no tangible proof, I believe that the handling of the human relations problems which

Fig. 3.

fall naturally to your lot, has as great a dollar value to industry as the handling of strictly physical medical problems.

THE question has been raised as to where, when, and how can employees be encouraged to blow off steam to the nurse? Now the tendency to unburden a problem to someone else is inherent in most people. However, the proper atmosphere and opportunity must be provided, if this tendency is to be given voice. Two things necessary to a proper atmosphere were mentioned in our opening remarks, namely, that the "confidence" of the employees has been won, and a feeling that the department operates in a "neutral zone" has been established in the hearts and minds of the employees. There are three other important factors involved:

1. Time: There must be available time to give to this important phase of nursing activity—or there will be no opportunity.

2. The nurse should be a good listener, and have a personality that conveys the impression to the employee that she has a sincere interest in the individual's problem.

3. Privacy: An important factor is supplying the proper atmosphere. I have visited and seen pictures of many industrial Medical Departments. Some fairly bristle with professional efficiency and are magnificent compositions of tile, chrome, color, uniforms, and modern equipment. However, a coldness is injected when you see from three to seven employees of both sexes undergoing various treatments at the same time, all in plain view and within easy ear-shot of each other. Here is an apparent disregard for the dignity and privacy of the employee as an individual. "Blowing off steam" in this atmosphere is largely confined to those few employees on the moronic fringe; opportunity is denied to the majority. Privacy can be built into your department clear down to the minor procedures (Fig. 2). Chin-high partitions between your redressing spaces will insure some privacy, increase efficiency, and improve the human relations within the Medical Department. Architecture without privacy robs the nurse of her greatest opportunity to pick up human relations problems.

FINALLY, how do you deal with these problems? Literature and lecture are crammed with a variety of methods, theories, principles, approaches, and techniques. Each, no doubt, has merit, but there is no single one that can be applied successfully to all the problems that will arise. Your services are not confined to selected groups such as would be found in a general hospital, a sanatorium, or a psychopathic institution. You serve a cross section of all the people, which contains human problems as numerous and varied as the leaves in the forest. Problems will be brought to you that the employees would be reluctant to bring to their own family physicians or spiritual advisers. Often you will be their main support in time of trouble. Your actions in this important phase of your daily work will be more in the nature of a "calling" that a purely professional service. Your opportunities are golden; responsibilities great. Do the best that you can to fit your approach to each individual case, humbly hoping that the approach is the right one. It is so very, very difficult to help people without hurting them, and so important that you help people help themselves. Patience and a genuine love for your fellow man are the best guarantees of successfully handling these human relations problems.

Always there must be sympathy, for after all the very basis of medicine is sympathy and the desire to help others.

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The Techniques and Importance of Interviewing

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THE purpose of this portion of the program is to provide some information about the basic principles of interviewing. Our organization, the Survey Research Center, has devoted a period of several years to the development of various procedures. Some of the principles and techniques at least partly may be applicable to your own situation in nursing counseling, and also in any other situation when anyone present endeavors to obtain information from another.

There are many things in interviewing that a clinical psychologist or a psychiatrist would be more qualified to tell you about than I am, but in some ways our problem is similar to yours, and perhaps I can offer some helpful suggestions.

The interview situation, being a social situation between two people, is of course, as old as the first cave man trying to ascertain from a second cave man just where he saw such and such sabre-toothed tiger, and how long the tooth was, and just what the possibilities of attacking it were.

The problem of one human being trying to get information from another human being is as old as society itself.

We could gain some insight into interviewing by tracing its history up from the witch doctors trying to elicit information from pre-historic citizens in order that they might learn ways to control them; the church confessional; the early psychiatrists of the nineteenth century; the modern day attorney trying to draw the facts from his client; the physician talking with his patient, endeavoring to separate the organic symptoms from the psychic; the personnel officer interviewing the applicant; the social worker in her many cases; the industrial nurse in her effort to get from the employee a clear statement of his medical history or discussing with him a problem that is bothering him.

Unfortunately we cannot go into the full history of the interview other than to mention one source which helped to contribute to the kind of interviewing we do—survey interviewing. In the early days of our organization, members of our staff were dissatisfied with current practices in survey interviewing. That was around 1940. Interviews were carried out on an impersonal basis, and there were relatively few answers. The dissatisfaction came from the thought that getting information from people, especially the more personal kind such as attitudes, is a complex business, and, for many purposes, an impersonal short-answer type of interview gives only superficial glances into a person's feelings and attitudes and his life situation. So our staff turned to the field of psychotherapy, where psychiatrists and psychologists and social workers had spent years working out techniques for delving into the dynamics of people's attitudes. Practitioners in this field were called in, and many of the principles and techniques of the therapeutic interview were adapted to the survey interview. One source of benefit came from clinical therapy, especially the so-called client-centered therapy. I would recommend to you Dr. Carl Rogers' book called "Counseling and Psychotherapy." Something of that sort would be applicable as far as counseling is concerned.

Without going further into the history of interviewing, I will tell you a little about our industrial surveys. Our industrial interviews deal with two main types of material: (1) psychological—the employee's personal attitudes, opinions and perceptions about himself, his job, his boss, the company, etc. (often this involves some really emotional material); and (2) factual—more objective facts regarding the respondent's life, work history, income, education, etc. I would judge that these two categories of material would be analogous to the types the industrial nurse deals with in her interviewing.

THE setting for our industrial interviews is usually in an inconspicuous office in the plant where there is no type of authority present, and where a respondent can feel that he can speak freely. In preparing the situation, the interviewer identifies himself, explains the importance of the survey, the anonymity of the respondent, and the impartiality of the role we play. He explains that we are there to get information—that we are not "company spies." In most cases, previously to the survey, we have worked with the company and the union through the house organs, the company papers, and so on, to gain the employees' acceptance of the survey before they see us for the interview.

Before going further, perhaps we should distinguish between two types of interviewing. The one type, which can be called the "therapeutic interview," is like that which is carried out in the psychological clinic. In this type one is interested in the attitudes of and facts about the patient as they relate to his problems; also, in this type the therapist (and let's face it, you are a therapist, in a way, in your counseling role) the therapist's major responsibility is to help the patient develop insights into his own attitudes as a means of therapy.

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In the second type of interview (the kind that we do), which you might call the informational or survey interview, the interviewer is only interested in attitudes and facts about topics to which he wants the answers. In the informational or survey interview, the collector of the data, or the interviewer, is the one who needs to develop insight into the respondent's attitudes. In this function, you are a collector of information, but in the other function you are giving the employee (the patient) an opportunity to blow off steam so that he can develop insight into himself and his problem.

The therapist or counselor in this type of interview is more often involved with fundamental inter-personal attitudes, with all of the psychological defense mechanisms that surround such attitudes. The counselor must be able to observe attitudes that are stripped of their external covers (i.e., the "defense mechanisms," such as rationalization, repression, etc.). This does not mean, however, that the informational or survey interviewer is not at times faced with the problem of breaking down the defenses of the respondent.

Sometimes to get information, just plain factual information, you have to break through a whole series of defenses.

Here, I should mention that the rest of my remarks will apply primarily to the informational type of interview. Of course, there will be a lot of overlapping, and in our discussion later on, perhaps we can talk more about the counselling type of interview.

UNFORTUNATELY, we cannot provide the interviewer with a technique which takes full account of the variables at work in the interviewing situation. The interviewer must recognize what we call the "human element," i.e., he must consider the respondent's motivations, ideas, and defenses while trying to collect the information that he needs, and many times these defenses get in his way.

The measure of the interviewer's success is largely the extent to which he is successful in recognizing and dealing with these and other phenomena of the interviewing process. Thus in discussing the role of the interviewer and his techniques, we have to talk largely of the interactions between the respondent and the interviewer, and the ways in which the interviewer can deal with them.

The fact is that we have no single integrated body of interviewing techniques to guide us, but we do have some suggestions and principles we have developed in the psychological clinics, and also in the research that social psychologists have done on communication in small face-to-face groups. Actually, the interview is a social situation in which two people are interacting, and, by interacting, I mean that the behavior of the two people is inter-related. What the interviewer says and does affects the ideas and reactions of the respondent, and what the respondent says and does affects the behavior of the interviewer. Therefore, this social relationship existing between the two people, the respondent and the interviewer, is in part the determining factor in the outcome of the interview.

The interviewer, as I see it, has three basic functions. The first is to set the tone of the interviewing situation so as to motivate the respondent to talk freely. The second is to lead the respondent to talk on the topic by means of appropriate questions, and assist him in developing his thinking, but to do so in a way that doesn't contribute to the form or content of the answers. And the third is to keep a written or mental record of the interview.

Let me first discuss how the interviewer constructs the interviewing situation so that the respondent will be motivated to talk. I should assume that this is one of the big problems of industrial nurses.

How is the motivation created? It is difficult to describe the specific actions an interviewer should perform in order to motivate the respondent to communicate; this is possibly a matter of know-how and experience, with, of course, a liberal sprinkling of sensitivity and intuition. However, it is clear that the respondent will be more likely to communicate if he sees the interviewer as a means of attaining some goals which he considers desirable.

The respondent will also be motivated to give accurate and complete information as a means of blowing off steam, or attaining some catharsis or satisfaction out of the interview relationship. Thus the interviewer needs to sense what the respondent wishes, his goals, with respect to the interviewing procedure, and, having appraised what these are, to explain to the respondent how the interview will satisfy them.

Another motivation important to the interviewer comes from the personal relationship he builds up with the respondent. In part, this relationship depends on the interviewer getting himself seen by the employee, or the respondent, as an agent of desired change. This in turn requires that the interviewer be seen as receptive and accepting and understanding (this is pleasing to most respondents, and increases that feeling of friendliness which the interviewer terms "rapport"). Here, I might mention that rapport is not something which is "plugged into" at the beginning of the interview in order to get it off to a good start, and, at the end, to leave a sweet taste in the respondent's mouth. We should keep rapport at the highest level possible throughout the interview—this is all-important if you are talking about something quite personal. The more intimate or emotionally charged the interview is, the more delicate the job of establishing the relationship, and the relationship of rapport must be deeper. This relationship has been described by such words as, "warm, understanding, accepting, tolerance."

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Now, because you get this feeling of understanding and acceptance across to the respondent, it doesn't mean that you should become involved with him. The relationship is close in terms of the understanding and acceptance, but it still remains at the same detached, or objective, aloofness which is most appropriate with a professional client relationship. That's a ticklish thing to get across. It is trying to show the other person that you are an understanding human being—that you are listening, that you accept his ideas without becoming involved with him personally. It is hard to do.

In addition to the things I have mentioned, in the early stages of the interview the interviewer must prevent, or decrease, certain barriers to communication that the respondent may feel. One such barrier may be the respondent's skepticism about the stated purpose of the interview. For example, during a public opinion interview, he frequently confuses the interviewer with a sort of salesman, and we have to convince him that we are not trying to sell him something, and that he has an interest in it, too. I suppose there is a similarity in your case. Perhaps the respondent might not want to communicate with you because he sees you as authority. You represent the company, and the problem is to break down that feeling in his mind and show that you are a human being.

Another barrier may be the respondent's feeling that granting the interview will in some way make him vulnerable. This essentially is a problem in reassuring him with respect to its anonymous or confidential character.

A third barrier may be the respondent's idea that the interview is to check up on him in some subtle way. Here again, rapport is important.

SO, TO SUMMARIZE, the first thing the interviewer has to do is to set the tone of the situation so that the person will communicate. The interviewer makes a careful effort to establish the setting, since the respondent will react more favorably and openly in a situation that he understands and accepts. Thus the interviewer, in a sense, defines the situation so that the respondent will have a clear picture of where he stands, and the roles that he and the interviewer are to play. As a part of this, the respondent must understand and accept the purpose and importance of the interview, and feel confident that the interview material is confidential. In a manner similar to the psychologist's technique, the interviewer maintains a setting to keep rapport at a high level.

Also important to the structure or the tone of the situation is the permissive nature of the interview. The respondent must feel free to open up without hurry; he must feel that, "here is a human being who will listen to me, and I can feel free to let down my hair." He gets the feeling that his ideas are accepted and understood by the interviewer. It is that feeling of "here's the person I can really talk to and he'll listen to everything I have to say."

The initial tone that you set up in the interview is important, also, because it is a new kind of situation for the respondent, and it needs to be defined for him so that he will react to it in a way that will allow him to open up. I am talking about the counseling type of interview, the idea of a person listening to my story. The average employee will open up to a close friend, or maybe a clergyman, or some one like that who will listen, but he wouldn't talk freely to most people, and it is a new experience for him. It is important that the interviewer understands that and eases him into this permissive feeling that he can say anything he feels like saying.

You can understand that in the Kinsey Sex Behavior interviews, the interviewer had to be very careful not to evidence any feeling of criticism; the mere flick of an eyelash will maybe get across the feeling to the respondent that "I have just said something this person didn't like." Less educated people especially, being less verbal, tend to have a keen sensitivity in noticing facial and body gestures, and interpreting them. A little thing like showing a bit of startled reaction can ruin the rapport.

Now on the interviewer's second function—that of stimulating the respondent to talk on the topic of the interview by means of asking the appropriate questions—there are a lot of things we could say, but unfortunately, we don't have two days in which to say them. Let me summarize a few of the principles of how to select your questions. The questions must be worded and defined in a way that will allow the respondent to talk freely, and will not influence his answers. This means that the questions have to be oriented to the respondent. This goes back to this client-centered therapy. The whole interview is done in terms of the person you are talking with, so your questions should be oriented to the respondent and should be in a form that is consistent with his own logic on the topic. You may find yourself wording a question so that actually it isn't good English, or wouldn't make sense to other people, but you have to approach the respondent on his own ground.

This means also that your questions should be neutral in nature, especially when dealing with more personal attitudes and ideas. One way of handling this is to use what we call "open" questions. Take for example, the question, "What do you think about the idea of salary control?" Now that type of question has been called open, or free-response, since it permits the respondent complete freedom to discuss the topic from any viewpoint that he wishes to take and he can choose his own way of answering it and the way that's most significant to him from his own experience. Another good rule is to make your questions simple, taking up one topic at a time.

Another principle we often use is to arrange the sequence of the questions in a conversational order. When you open a social conversation, you usually don't start in on personal material; you begin on something that is fairly innocuous. If he has a specific problem with a fellow worker, you don't immediately start in on that. You probably want to start in a more open way by saying, "Well how are things going down there?", or "How are you getting along with your work?", and drain off some of his general feeling. By that time, he is getting around to where he feels that here is this person I can talk to, and then you can get him to the point where you can ask him the more personal things.

In addition to stimulating the respondent to talk by asking questions, you also have the problem of assisting him to develop his answers without contributing to them. In other words, the interviewer is neutral. In many cases, the original question fails to bring out a response which is sufficiently full, or which is in some point unclear; and often this is due to the fact that the respondent doesn't exactly know what is expected of him, doesn't know that full discussion of the point was required, or that he was supposed to give certain details. So then the interviewer, having asked the question and received an incomplete or vague response, has to have some technique that will enable the respondent to go a little further (at the same time, keeping the interview friendly and neutral).

There are three situations in which this need can occur: the interviewer might need to get additional information; or he might want to clarify information or statements which the respondent has already made; or he might want to keep the respondent talking within the objectives of the questions he is asking him. There are several methods of helping the respondent to develop his answers.

What I am trying to do here is to break down the second function of the interviewer, which is to state the topic for discussion, and get the respondent talking. One method by which to do that is the "expectant pause," i.e., to pause often enough to convey to him the impression that he is merely beginning to answer the question (this will often bring forth an amplification of the topic). Another method is just a brief assenting comment—"ah-huh"—"yes, I see," or "that's interesting"—such as is natural to social conversations and fits into the interview conveniently. Another method is asking neutral questions which supplement the original questions you've asked—neutral questions such as, "Why do you think that is so?", or "I'd be interested in your reasons for saying that," or "Who do you mean," or "Would you tell me more about that?" These are all neutral stimulating questions. They are encouraging, and intimate to the respondent that the interviewer is interested and understands what the respondent has offered, and is now asking for more information.

Another method is called the "summary statement" in which the interviewer summarizes what the respondent has just said as a means of inducing him to elaborate. For instance, the interviewer might say, "Let me see if I have this straight. As I get it, you feel that the other workers are doing this and that, is that right?" This summary of what he has said should reflect exactly what he has said; you have to be careful not to add more than he actually said, and one of the basic principles is to be completely neutral. Another technique is repeating the question you originally asked. In addition to asking these neutral questions, you can look on your own behavior as a means of stimulating him to continue. The fact that you are an understanding person and seem to be interested in what he is saying, and don't pass judgment on your face or by what you say, stimulates him to talk further.

These methods of helping the respondent to develop his answers are referred to as "probing." In a way, you can look on the interviewer's probe as similar to the medical probe, an instrument which will lay aside the top layers so that you can get to the materials that are down underneath without disturbing any of the material you are going through. So the interviewer has a function similar in that respect to that of the medical person.

This method of probing is a technique borrowed from the psychologist; by following up with neutral probes you stimulate further answers. This also serves to keep the respondent on the topic of the question. When he roams from the topic, the interviewer pulls him back gently by re-asking the original question, or maybe by probing something that he has said earlier. This indirect principle of probing is widely used in client-centered therapy in the clinic. In probing, the interviewer remains completely neutral and phrases his probes in response to what the respondent said. Since the interviewer does not go beyond the bounds of what the respondent said, he adds nothing new which can bias or direct the attitude of the respondent. Thus he never injects his own thinking or feelings into the interviewing process.

In carrying out these probing methods, in effect, the interviewer does three things: he indicates a general interest in what the respondent is saying; he indicates to the respondent that he understands and accepts what the respondent has been saying; and he makes a direct bid either for more information, or for a clarification of the information that has been given.

Suggested Reading

1. Counseling and Psychotherapy, by CARL ROGERS. Houghton Mifflin Co.

2. Essentials in Interviewing, by ANNE FENLASON. Harper Brothers.

3. The Art of Asking Questions, by STANLEY PAYNE. Princeton University Press.

4. Sexual Behavior in the Human Male, by KINSEY, POMEROY and MARTIN. W. B. Saunders Co. (Chapter 2, on Interviewing).

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Discussion

JOSEPH M. SULLIVAN, Employment Manager, Detroit Edison Company: I have listened with great interest to the comments by DR. HIMLER and DR. FULTON, and the remarks of MR. HOWLAND on "The Techniques and Importance of Interviewing," and I will admit that I am in complete agreement with all of the statements made. I was much impressed with the statistics presented by DR. FULTON. While we do not have such a summarization in our company, I would judge off-hand that they fall into about the same pattern—in the neighborhood of 20%. What is of great concern to me, after thinking this matter over, is the other 80% of employees who do not have occasion to visit the medical department, or, if they do, are considered somewhat in the normal realm, in that they do not attract any undue attention. Whom do those employees look to for counseling, and is there some danger that some of them may receive poor counseling by people, including supervisors and fellow workers, who are inexperienced in the field of counseling? It seems to me that a great deal of damage can be done if an employee who is having difficulty gets into the hands of a supervisor who is not equipped to give him the proper type of guidance. I might cite one example of a case that was not handled satisfactorily. One of our interviewers, during the exit interview of a long-service employee who was being discharged from the company because of frequent absence due to alcoholism, established rapport, and the man began to talk about his case. It developed that for some time he had been actually seeking assistance, but because one of the people he asked for help was a strict teetotaler who had very little sympathy to offer and shrugged him off with the remark that it was just too bad, it was a lost cause in his particular case. The interviewer was impressed by the employee's sincerity, so arrangements were made for him to be sent to our medical department where he was given a thorough examination and referred to a psychiatrist for diagnosis. Following this, we enlisted the aid of Alcoholics Anonymous and they had a representative contact our employee immediately. To make a long story short, this individual has regained his place in society, returned to his former job, and only recently has been promoted. I cite this case because of the danger that inexperienced counselors may sometimes do more damage than good. Of course, all such cases do not turn out as satisfactorily as this one, but it does serve as an illustration of what can be done. After listening to the discussion here, it occurs to me that some arrangements could be made with the University of Michigan to develop a course in counseling that would be of great assistance to industrial nurses. While in the larger organizations, the companies are pretty well equipped to channel problem cases into the proper places such as the personnel department, medical department, etc., in some of the smaller companies where it is not practical to have such an elaborate set-up, the industrial nurses have to be counsellor, nurse, and doctor in a great many cases, so that such a course would aid them considerably in handling problems in the human relations field in ways that would be consistent with their company policy. Several years ago I was fortunate enough to be permitted to take a course given by Dr. Raphael in psychiatry which ran over a period of two years. It was a helpful, informative, and educational course, and I well remember how Dr. Raphael informed the class before the final examination: "Now you have completed your course, but don't attempt to diagnose mental cases that you run up against. Rather this course should be of benefit to the extent of your being able to recognize that there is some deviation from normal. It will assist you in recognizing these cases and steering them into the proper channels for diagnosis and treatment."

Always a Failure

THE communistic idea in its gentler and more idealistic forms has been written about for centuries and has had its appeal for immature idealists in every generation. Both Jamestown and Plymouth started out on this basis, but soon abandoned it as a failure, due to its lack of incentives. Captain John Smith wrote shortly after the abandonment: "When our people were fed out of the common store, and labored jointly together, glad was he who could slip from his labor or slumber over his task he cared not how; nay, the most honest among them would hardly take so much true pains in a week, *as now for themselves they will do in a day;* neither cared they for the increase, presuming that howsoever the harvest prospered, the general store must maintain them, so that we reaped not so much corn from the labor of 30, as now three or four do provide for themselves." How little human nature has changed since then!

—From "Individuals and Incentives," by DR. ROBERT E. WILSON, Chairman of the Board, Standard Oil Company (Indiana), Commencement Address, Lake Forest College, June 7, 1952.

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Methemoglobinemia—Recognition, Treatment, and Prevention

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THE TERM "methemoglobinemia" as it is used by the industrial medical groups associated with the chemical industries refers to the cyanosis or "blue lip" resulting from poisoning by one of the aromatic nitro or amino compounds. This term denotes the formation of methemoglobin in the blood stream. Methemoglobin is an oxygen compound of hemoglobin. In it oxygen is firmly held so that it is not available for use in the tissues. This compound has a brown color. There are many causes of methemoglobin formation. Cases of congenital abnormalities in the red cells have been reported with methemoglobin formation. The ingestion of nitrates and nitrites in drinking water and bacterial fermentation in the intestinal tract have also been reported as causing methemoglobinemia. At this time, we will limit our discussion to those cases of methemoglobinemia resulting from poisoning by certain aromatic nitro and amino compounds. The simplest and most characteristic of these compounds are aniline and nitrobenzene.

Historically, it is interesting to review a record from the Guy's Hospital Reports of 1864[1] regarding a case of nitrobenzene poisoning:

"A woman, aged 30 years, tasted a liquid which had been used for flavoring pastry, and perceiving that it was very acrid on her tongue and lips, spat it out immediately and washed her mouth with water. She thought she could not have swallowed more than a drop, but in replacing the bottle she spilled about a tablespoonful on the table and did not immediately wipe it up. The vapor strongly impregnated the air of the small room in which she was, and produced a feeling of sickness in another servant. The burning taste in the mouth was immediately followed by a sensation of numbness and tingling in the tongue and lips and a strange feeling for the next hour. As the woman became worse, Mr. Fotherby was called in, and saw her in an hour and three-quarters after the occurrence. Her aspect was then quite typical of prussic-acid poisoning: The eyes were bright and glassy, the features pale and ghastly, the lips and nails purple as if stained by blackberries, the skin was clammy, and the pulse feeble. Her mind was then clear and she described how the accident occurred and what her sensations were. She was able to swallow a mustard emetic, after which she became rapidly worse, lost consciousness, the teeth became set, the hands clenched and blue, the muscles rigid and convulsed. She vomited freely a pale fluid matter, which had the peculiar odor of nitrobenzol. The stomach-pump was used, but the fluid washed out of the organ had hardly any odor, owing, probably to the small quantity actually swallowed and its removal by absorption. In about 11 hours there was reaction, consciousness returned, and she was able to swallow. At the end of 17 hours she was much better."

The interesting part of this report is that the facts as noted are similar to those found in our cases. Only a small amount of the aromatic nitro or amino compound is needed to produce a methemoglobinemia. It has also been our experience that, early in the course of the illness, the patient feels very well. In fact, he may even show slight euphoria. His color may vary from a light gray to a dark blue depending upon the amount of the toxic material absorbed, inhaled, or ingested, and the amount of oxyhemoglobin that has been changed to methemoglobin. With percentages of methemoglobin in the blood stream up to 20-30%, the patient usually maintains that he feels fine and that he is not ill. In some cases, he may even become belligerent regarding his well-being. He has no symptoms except the change in his blood picture. Above 30% methemoglobin, he will usually develop a slight headache which seems to vary in proportion to the percent of methemoglobin. Until approximately 50% or more of the oxyhemoglobin is changed over to methemoglobin, he will have few complaints. He may show a slight nausea, a tired feeling; he may complain of some weakness and headache. These symptoms become worse as the increase of methemoglobin continues. At approximately 75% methemoglobin, the patient will show extreme weakness, aching generalized pains, slight dyspnea, some nausea, increased pulse rate, and may become comatose. Beyond this point, we are unable to go, for we have never had anyone show higher than 78% methemoglobin, and we have had no fatalities from aromatic nitro and amino poisoning. As was reported in the Guy's Hospital case, shortly after the removal of the offending agent, the patient makes a rapid recovery. Even those cases which show up to 78% methemoglobin return to 0% in the matter of 24 to 48 hours. The reconversion of methemoglobin to oxyhemoglobin is readily accomplished by the body and in itself is not accompanied by any red blood cell damage or destruction. This last statement has been confirmed by H. A. Eder, C. Finch, and R. W. McKee.[2]

A few facts concerning some experimentation with the aromatic nitro and amino compounds and their effects upon animals might be of

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interest. Clark[3] and his associates studied the acute effects of aniline on the circulation and blood changes in dogs. They found that the lethal dose for aniline was between 500 and 600 mg./kg. The heart rate and respiration increased, and the methemoglobin values increased up to a maximum of 60-70% of the total hemoglobin. With an increase in the methemoglobin, they found a corresponding rise in heart rate and respiratory rate. Correspondingly, these rates decreased as the methemoglobin was reconverted to oxyhemoglobin.

In the metabolism of aniline in the body, B'phenylhydroxylamine and p-aminophenol are formed. Using these materials, David Lester, Leon Greenberg, and Evelyn Shuhovsky[4] demonstrated that with the p-aminophenol the maximum formation of methemoglobin was 30-35% with a lethal dose of 640 mg./kg. With B'phenylhydroxylamine 63-66% methemoglobin was formed with a lethal dose of 35 mg./kg. With aniline hydrochloride 300 mg./kg. was given to a rat with a maximum of 45% methemoglobin. One-seventh the lethal dose of B'phenylhydroxylamine and one-twelfth the lethal dose of p-aminophenol gave the maximum methemoglobin formation. It was concluded that the formation of methemoglobin plays no important part in the acute toxicity of aniline or its derivatives. This work was done on rats. Rodents are not reliable as methemoglobin formers.

While the formation of the methemoglobin in the blood stream may not be the direct cause of death in the poisoning with aromatic nitro and amino compounds, this symptom is a vivid and striking one, and your first patient suffering from a severe methemoglobinemia will most assuredly startle you. The blue color of his lips, tongue, conjunctiva, and finger tips will be impressive, and you will wish to do everything possible to restore his natural color.

We have cited the relationship between increase in pulse rate, respiratory rate, and percent of methemoglobin in experimental animals. The correlation between the findings in the dog and our findings in humans can best be shown by presenting a number of examples. The following case histories will show you how these symptoms are related.

Mr. A. K. had a hemoglobin of 89% and a RBC count of 4,590,000 at the time of a routine examination on 12/17/36. About six months later, on 6/5/37, he had a spill of some aniline oil on the floor. He cleaned up the spill. His foreman noted that he was markedly cyanosed. He felt weak, slightly dizzy, had achy pains all over, and had a severe headache. He showered and reported to the Medical Department. A methemoglobin curve made by the method described by D. O. Hamblin and the writer[5] showed 64% methemoglobin, pulse rate 112. The patient was treated in our routine manner as will be described later. After two hours, the methemoglobin curve was 60%, pulse rate 112. During the next six hours, the patient had some nausea, his headache began to improve as did his color, the methemoglobin curve showed 35%, pulse 80. About 12 hours later, he had no complaints, no weakness, felt fine, no headache, his color was good, the methemoglobin curve showed 3%, pulse rate was 72. The following day, he had a hemoglobin of 89%, RBC count of 4,420,000, and methemoglobin curve 0%.

Mr. J. R. showed a hemoglobin of 91% and a RBC count of 4,620,000 on 7/23/36 in the course of a routine examination. He reported to the Medical Department on 7/29/36, complaining of a slight headache and palpitation. He had been working in aniline salt. His lips, tongue, conjunctiva, and finger tips showed a moderate cyanosis, pulse rate was 100, a methemoglobin curve showed 35%. He was given the usual treatment. The following day, he had no complaints, felt fine, his color was good. Respiration and pulse rate were normal. Methemoglobin curve showed 6%. He was put on outside work for one week. A repeat blood count then showed hemoglobin 90%, RBC count 4,630,000.

We could go on citing cases, but these will adequately bring out the points we wish to emphasize. It will be recalled that the hemoglobin in the first case cited was 89% before and also after cyanosis. The RBC counts showed 4,590,000 before and 4,420,000 after, the difference being within the technician's error. The same relationship holds true in the second case cited.

It can be seen that from these cases the hemoglobin and the red blood cell level before and after methemoglobin formation showed no appreciable change. This fact has also been borne out by studies made by H. A. Eder, C. Finch, R. W. McKee.[2]

Many methods of measuring the amount of methemoglobin have been developed and used. Briefly, the Nicloux & Fontes[6] method used the difference in carbon monoxide capacity before and after treatment of the blood with ammoniacal hydrosulfite; Van Slyke[7] applied manometric measurement to the method of Nicloux; B. Clark and R. Gibson[8] used a bicolorimeter method; D. Brabkin and J. H. Austin[9] worked on the spectrophotometry of this mixture of blood pigments. The recording spectrophotometer was employed in the method developed by D. O. Hamblin and the writer.[5] We have found this method acceptable and efficient. A small blood sample can be used and a quick answer returned. It does, however, require a costly bit of apparatus for its use. Since the development of smaller laboratory-sized spectrophotometers, I have been using a Coleman Universal, Model 11, to make our methemoglobin measurements. The results of this method have been checked against curves obtained on our recording spectrophotometer and found to have excellent agreement.

Byron D. Clark[3] and his co-workers reported

that prior to death in dogs, the most consistent electrocardiographic changes were a progressive decrease in the height of the R wave which became marked about the time of the maximal rise in methemoglobin. T wave and ST segment changes appeared irregularly. No case of prolonged PR or QRS occurred. The rhythm was of sinus origin. We have taken a number of electrocardiographic records on cases of acute poisoning with nitro and amino compounds. These cases ranged from 17% to 52% methemoglobin. None, however, showed an extremely high methemoglobinemia, nor was any of them fatal. In these moderate cases of cyanosis or methemoglobinemia, we were unable to demonstrate any consistent changes in any of the four standard leads. The pulse rate on all of them was proportional to the amount of methemoglobin in the blood stream.

Treatment

NUMEROUS methods have been advocated in the treating of these cases of methemoglobinemia. Before too much was known about the mechanism of poisoning by aromatic nitro or amino compounds, the victim was forcibly walked up and down by his fellow workers to "keep him going." He was also fed large quantities of milk. Later it was realized that this type of treatment was doing more harm than good, so the patients were placed on a bank in the open air and left to their own recovery. With the advent of industrial medical practice in industry, we tried to treat these cases logically according to the mechanism of the poisoning and their symptoms.

When a man is splashed with any of the aromatic nitro or amino compounds, or if he inhales fumes of them and shows any cyanosis or "blue lip," his foreman sends him immediately to the Medical Department. It is the supervisor's responsibility to see that his men do not get cyanosed, and, if they do, to see that they report immediately. At the Medical Department, he is stripped of all of his clothing, put in a shower, given a brush and soap, and instructed to scrub himself well, especially any areas which may have been contaminated. He is then put to bed and a methemoglobin determination is made on his blood. If he complains of a headache, he is placed in an oxygen tent and given oxygen by inhalation. Plenty of sweet liquids are given him in the form of soft drinks. If the methemoglobin reading is below 35%, he receives no further treatment. Bed rest, oxygen inhalation, and fluids have been found adequately to take care of him. If he shows more than 35% methemoglobin in addition to the preceding treatment, he is given 1,000 cc. of 5% glucose in saline solution intravenously. In all cases, a methemoglobin determination is repeated at the end of an hour. This is done to ascertain whether the percent of methemoglobin is increasing or decreasing in his blood stream. If it is increasing, he is again scrubbed—either he does it himself or a nurse does it for him—to remove any possible remaining aromatic nitro or amino compound. The finger nails and nasal cavities are watched particularly. It is our belief that as long as any aromatic nitro or amino compound remains on his skin, he will continue to absorb it and will form methemoglobin. As soon as it is entirely removed, then the natural reversal mechanism takes over and the methemoglobin is quickly reconverted to oxyhemoglobin with the prompt recovery of the patient. If the percent of methemoglobin is decreasing, no further treatment is given. In the majority of cases the methemoglobin will have been completely changed to oxyhemoglobin in a period of 24-48 hours, and the patient will appear and feel perfectly normal even when the methemoglobin has been above 75%.

Another method of treatment that has received considerable attention in the literature is the administration of methylene blue intravenously. This was reported in 1933 by Williams and Challis,[10] and Steel and Spink.[11] Later William B. Wendel[12] used 0.1 and 0.2 cc. of a 1% solution per kilogram of body weight with good results. He reported that all of the methemoglobin in the circulating erythrocyte was converted in the course of about 45 minutes into active functioning hemoglobin, even when the methemoglobin concentration was initially as high as 25-40%. He commented further that intravenous injection of methylene blue may not be entirely without ill effects. Gregoi reported experiments which suggest that patients kept in oxygen tents should be given methylene blue intravenously only with caution. Hemolytic anemia has been noted in dogs following injection of this dye. Leakage of the dye around the vein may produce a painful infiltration; too rapid injection may produce hives and a severe burning sensation of the lips.

We have never felt justified in using methylene blue, primarily because our cases have responded well to the conservative method of treatment described.

Safety Procedure

FIFTEEN to 20 years ago, the occurrence of poisoning with aniline or nitrobenzene or another of the aromatic nitro or amino compounds was fairly common. With the development of knowledge concerning the mechanism of poisoning and the installations of safety measures and precautions, a cyanosis case is a rarity in our plant. We have found that in order to keep our people from becoming cyanosed, we must keep them from getting any of the toxic material on them. In order to do this, we have:

1. Completely enclosed the processes for the manufacture of these materials.
2. Placed the control panels away from the operating units.
3. Equipped those tools that have to be opened

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with exhaust ventilation so that no toxic fumes can get to the operator.

4. Ventilated the work areas.

The only possibility of people being cyanosed at this time are those cases of accidental breakage of pipelines, or where a spill occurs, or where a man must enter a tool in order to clean it or repair it. In the latter cases, we have set up elaborate precautions, placing the responsibility on the supervisors to see that his men receive adequate instructions, that they only work for short periods of time in the toxic area, and that they are properly equipped. By properly equipped, it is meant that they should have proper clothing consisting of company supplied underwear and coveralls, rubber bootees, rubber gloves, hats, goggles, and Bureau of Mines approved respirators or air masks. It is our instruction that everyone working with any of these aromatic nitro or amino compounds must take a shower at the end of his shift. The men regularly receive clean clothing each day, and they do not put on their old used clothing until it has been thoroughly laundered. We definitely place the responsibility on the supervisor to see that none of his workers becomes cyanosed.

Careful observation of the working conditions and of the environmental air are important in the elimination of the hazard. This inspection is done jointly by the Medical Department and the Industrial Hygiene Department. An example of the value of this work can be illustrated by the following.

In 1948 reports were obtained showing that the maximum allowable concentration of 5 ppm of aniline was exceeded in the operator's breathing zone in the operation of a kettle where a manhole had to be opened to permit charging of material. Local exhaust ventilation was advised. The Engineering Department carried out our request. Re-sampling of the air in the same location showed that the level of concentration was well within the permissible limit.

A recent report from the Aniline Shop reads as follows:

Location	Aniline Concentration ppm.
Aisle—vicinity No. 3 and No. 4 kettle	Less than 1 ppm.
No. 4 kettle panel board	1 ppm.
Workers breathing zone—charging No. 4 kettle	0 ppm.

Reports such as this show the benefit of continued inspection and cooperation.

In order to be certain that the air in the work areas and in the tools in which men must work has no toxic level of fumes, our Industrial Hygiene Department has developed a rapid and simple method of measuring the concentration of these fumes.

Briefly, the method consists of scrubbing a known volume of the air to be tested through dilute sulfuric acid which traps the aniline. The aniline is then diazotized with sodium nitrate and coupled with H acid, which results in the formation of a pink color the intensity of which is proportional to the amount of aniline present. The sensitivity is such that less than 5 ppm of aniline in the air can be determined after scrubbing only 500 ml. of air through the sulfuric acid.

Using this test, we are able to keep our workers out of any dangerous concentration of fumes. Before a man enters a tool to clean or repair it, a spot check with the above method assures us that the air is safe for work.

Summary

THE aromatic nitro and amino compounds best represented by nitrobenzene and aniline oil may be absorbed through the skin, the respiratory tract, or by ingestion. By each route of entry methemoglobin is formed.

Methemoglobinemia is one symptom of poisoning by aromatic nitro and amino compounds. The formation of methemoglobin in the blood stream is rapidly followed by a reversible reaction to oxyhemoglobin. Early in the course of the poisoning, the patient feels perfectly well. Only after a large amount of methemoglobin is present in the blood stream does he manifest any symptoms. Early recognition of cyanosis aids in minimizing the effects of the aromatic nitro and amino compounds. Prompt treatment is essential for rapid recovery. A conservative method of treatment is described and recommended.

The laboratory spectrophotometer can be used to measure the percent of methemoglobin rapidly and accurately. A spot check test is described for use in the field in evaluating air concentrations of aniline.

Constant supervision and inspections by the Medical Department and the Industrial Hygiene Units are necessary to prevent poisoning by aromatic nitro and amino compounds.

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Allergy and Related Problems in Flour Milling and Grain Processing

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ALLERGISTS estimate that about 10% of the population suffer from symptoms of hypersensitivity for which they seek medical attention from time to time. In addition, a much larger fraction of the population are troubled infrequently by specific food and drug sensitivities or contact dermatitis such as poison ivy. The latter are usually recognized by the individual and he learns to avoid them. The prevalence of hay fever and gastro-intestinal allergy in the population has been estimated at 5% each, bronchial asthma and chronic allergic rhinitis 3% each, and allergic eczema at less than 1%. Of course there is considerable overlapping, and additional manifestations including urticaria, allergic migraine, nervous system disturbances and reactions of the genito-urinary tract should be listed. Hay fever is generally regarded as the most common allergic manifestation of clinical importance and bronchial asthma as the outstanding cause of disability. In industry, allergy plays an important role in the etiology of occupational dermatoses, the leading cause of temporary incapacity among occupational diseases.

Today in the United States there are 85,000 to 90,000 production workers engaged in flour milling, cereal manufacture, feed milling, and closely related occupations. Exposure to the dust of grain, flour, and cereal products in this industry is associated with special problems in the recognition of allergic individuals and avoidance of allergic reactions. Reference works in the fields of allergy and occupational diseases describe instances of specific sensitization among these workers to various kinds of cereal grain dusts and to impurities of grain. The frequency and severity of such reactions among employees in modern plants have not been subjects for review, nor do the references elaborate on the less specific effects of mill dust upon the more common forms of allergy.

Medical department records, including disability and occupational disease reports of approximately 4,500 employees in the milling industry, have been reviewed to investigate the incidence of allergic manifestations. All of the employees in this survey are engaged in work that exposes them to or brings them in contact with the airborne dust of flour, wheat, or other grains. The production workers of 23 major plants and a small number of employees of terminal and country elevators are included. At 18 plants the predominate dusts are wheat and flour. Two plants are oat mills and three are cereal manufacturing establishments for the processing of wheat, oats, and corn products. Rye milling is limited to a single plant.

During the four-year period ending last December, 39 cases were reported by employees (or their physicians) who claimed that allergic manifestations were the result of contact or inhalation of flour and grain dust. The total represents claims filed for all workers having two months or more of service, employed in approximately 4,500 jobs during 1948, 1949, 1950, and 1951. It reflects the experience of considerably more than 4,500 workers, because of the usual turnover of employees. It does not include all cases occurring among new or temporary employees during their probationary period of two months. Seven cases were attributed to respiratory irritants and 32 to cutaneous irritants. The claims were not established as related exclusively to occupation in 13 cases, and 26 were recognized as compensable cases. Based on the number of compensation cases reported, the incidence is less than 2 per 1,000 permanent employees per year. None of the dermatitis cases was chronic or severe, and all responded to treatment, with recurrences reported in two cases. Ten persons of the dermatitis group have left the employ of the company, but follow-up study was possible for the 22 who remained. In two cases it was necessary to transfer them to different kinds of work, but within the same plant. During the same period, 14 cases of dermatitis occurred among the same employees as a result of contact with irritating or sensitizing materials exclusive of grain and grain products. The seven cases of respiratory allergy include two who had symptoms of asthma and five of hay fever. Four were recognized as compensable cases. Three of the seven persons in this group have terminated, but the four who remained are working at the same plants and, by avoiding locations where dust concentrations are highest, they are reported to have had no further difficulties.

Twelve years ago a similar study was made of 550 employees during five years at work in the largest plant of the group under consideration. There were seven cases of respiratory allergy having chronic symptoms which were attributed to flour and wheat dust exposure. All of these had been employed eight or more years at the same work before symptoms of allergy developed. Two men terminated their employment, but five with the aid of treatment were able to continue work in departments where dust concentrations were relatively light.

The small number of cases reviewed in the

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two studies provides meager data for analysis. Cutaneous manifestations of allergy outnumber the respiratory by a ratio of four to one in the recent survey. All except two of the compensation cases in the last four years have occurred in plants where the predominant dusts are flour and wheat, and these are the dusts that have been specified as the irritants in the majority of the case reports. Little significance should be attached to this finding, because of the limited exposures to other cereal dusts. All of the cases reported in the earlier survey and most of those in the recent study were employees who had done the same kind of work for one or more years.

The incidence of about three respiratory cases per 1,000 permanent employees per year, as revealed by the earlier study, has declined since then to the present rate of less than one. Major improvements in dust control have been made, and screening procedures for the recognition of allergic persons among applicants have been stressed in recent years.

PRACTICAL and efficient procedures for recognition of allergic individuals who apply for work in the milling industry are equally important to employees and employers. In appraising an applicant's physical qualifications, the term "allergic individual" is applied to the person who gives a history of allergic manifestations or who exhibits symptoms and signs. Allergic cases are evaluated in terms of clinical manifestations without particular reference to hereditary predisposition and the allergic state. The importance of the history has been emphasized recently by a committee of the American Academy of Allergy in their recommendations for induction of draftees into the armed forces. The committee classified asthma as not acceptable if present to any degree or if the subject has a history of asthma after the age of 12 years. Severe hay fever and severe allergic dermatoses were also classified as non-acceptable. Neurodermatitis, hives, angioneurotic edema and dermographism were listed as acceptable if not incapacitating during civil life. Editorial comments accompanying the publication of these recommendations in the *American Journal of Allergy* (May, 1951) called attention to the high incidence of serious disability in cases of mild asthma with exposure to dusty conditions. In 1944 and 1945 asthma had the highest incidence of all the respiratory diseases reported by one branch of the armed forces. Statistics were cited to show that more than one-half of the asthma cases who became disabled had existed prior to induction.

To review the history of allergic manifestations as reported by applicants for flour and grain mill work, the findings on pre-employment examinations have been used. These are the records of applicants seeking employment in the same plants and elevators referred to previously. The pre-employment examination is a requirement for all applicants, and periodic examinations are made among large numbers of employees each year. All examinations are performed by authorized consultants who are familiar with specified standards, and findings are reported in accordance with uniform procedures and a medical rating system. Examinations include specific questions on the symptoms and history of allergic manifestations, and inquiry is made into the evidence of sensitivity to flour, grain, and cereal products, or their dusts. The examining physician is held responsible personally for obtaining and recording the history. The procedure includes an investigation of the few physical findings that may indicate allergic disease. Skin testing for sensitivity is not used in the pre-employment examination.

The findings in a series of 4,022 pre-employment examinations revealed 55 applicants who did not possess the physical qualifications for placement in the occupation under consideration. Ten of these were not acceptable because of symptoms or a history of allergy including one or more of the following: (1) chronic, severe manifestations including hay fever, if incapacitating or not responsive to treatment; (2) bronchial asthma of any degree of severity; (3) allergic dermatoses, if chronic or incapacitating; (4) sensitization reactions to flour, cereal grains or their dusts, excluding gastro-intestinal allergic reactions the result of ingestion. There were 74 examinees who gave a history or had symptoms of allergic manifestations, comprising about 2% of all applicants. The 64 applicants having histories of mild or moderate symptoms not of a disqualifying kind were placed at work on a temporary or provisional basis. Under this system, a medical department recommendation for permanent employment depends upon observation during a trial period of two or three months, followed by a re-examination. If allergic manifestations appear during this period, a recommendation is made to discontinue employment in dusty locations. In the case of slight or mildly discomforting symptoms of respiratory allergy, a change to a department where dust concentrations are light may result in disappearance of symptoms. Of the 64 allergic individuals placed at work under these circumstances, about one-half showed no susceptibility to the allergens or less specific effects of flour or grain dust. Six months after starting work, 28 of the original 64 were successfully employed. Since the reasons for termination were not determined in all cases, the follow-up study is incomplete. Disability and occupational disease reports do not reveal any of these cases reported as having compensable allergic disorders.

Records of 325 termination interviews were studied to determine reasons given for resignations. These are the records of all persons terminating during the course of one year at a plant where there is constant and widespread exposure to mill dusts. Eleven persons, about 3%,

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gave "intolerance for dust" as the reason for resigning. Nine persons had been employed for less than one month and seven for less than one week. The reason given in one case was aggravation of chronic sinusitis, and the others claimed to have mild symptoms of coryza, rhinitis, or slight irritation of the skin.

The success of the Medical Department's program for allergy control is determined to a large extent by the industrial hygiene program. Efficient dust control and high standards of sanitation reduce exposure to allergens and minimize the effects of irritant dusts for those who may be highly susceptible. Personal protective devices, including the dust filter-type of respirator, goggles, and protective clothing, have their place for work where dust concentrations are high, such as occurs in grain shoveling. Washrooms, including showers for bathing, are necessary facilities. The following statements are quoted from the latest edition of Schwartz' "Occupational Diseases of the Skin":

"Reports from modern well-equipped flour mills reveal an exceptionally low rate of morbidity among the workmen. Silos for the storage of grain form an integral part of such plants, and pneumatic apparatus increasingly supplants the methods of the old-fashioned grain elevator. A system of filters, separators, and sorters mechanically eliminates impurities and debris from the grain, while exhaust ventilation greatly reduces the hazards from dust."

Since these observations were made, there have been other improvements. Cyclone dust collectors are being replaced by filter-type collectors that are rated 99% efficient, and mechanial cleaning equipment has made substantial contributions in dust control and sanitation.

The hazard of grain dust explosions has accounted for much of the progress made in dust reduction. Statistics published by the National Fire Protection Association show a remarkable decline from year to year in the number of fatalities and injuries caused by dust explosions in the flour and feed mills, cereal plants and grain elevators of the United States. Between 1930 and 1940 there were 62 fatalities and 235 injury cases; between 1940 and 1950 there were 20 fatalities and 120 injury cases.

SUMMARY, including comments on treatment: The number of cases of occupational allergy coming to the attention of the Medical Department, either because of incapacity or the need for ambulatory treatment is not large. The incidence is no higher than the average number of compensable hernia cases reported each year.

Case reports reviewed in this study do not include employees who occasionally have symptoms of allergic rhinitis or coryza comparable in severity to the common cold. A majority of these are pollen or mold-sensitive hay fever victims who have a limited tolerance for mill dusts. Unusual or excessive grain dust exposure may precipitate reactions, particularly during the pollen season. Other factors, such as emotional disturbances, fatigue and upper respiratory infections may have the same effect just as readily as excessive dust. To work successfully, these employees must learn to adjust to their limitations and avoid high concentrations of dust. In many instances they are under the observation of their family physician or an allergist, and have had hyposensitization treatment. Antihistamine drugs are of value in preventing the more severe symptoms during an acute episode. Medical ratings are assigned to indicate necessary restrictions in employment of these cases.

This study confirms the findings of others who have reported on the development of respiratory allergy in the milling and baking trades. Many years elapse before specific respiratory sensitization to flour dust becomes evident, as measured by time spent in these occupations. Several series of cases indicate not less than eight years are required and as much as 30 years may elapse before symptoms develop. Allergic rhinitis and coryza may precede the onset of asthma by a few months or a year. Cutaneous manifestations may appear early or late. Specific skin reactions to flour and grain, according to some investigators occur with about the same frequency as the respiratory reactions. Dermatitis may precede rhinitis or asthma by many years, and its early appearance may explain the low incidence of respiratory cases observed in this study. With the occurrence of allergic dermatitis, the employee may be transferred to other work or resign before sufficient exposure time has elapsed to provoke the respiratory symptoms.

Skin testing of patients for hypersensitivity to the various allergens in flour mill and grain dust is not a simple diagnostic procedure. In addition to the common cereal grains and flour, tests should be made for members of the fungus family, including molds, smuts and rusts that parasitize grain. Ragweed and other pollens are brought into the elevators with the harvest grains and may account for the so-called nonspecific reactions among the pollen sensitive cases. Mill dust is regarded by some allergists as a specific entity in itself, in much the same way that house dust has been accepted. Reactions to skin tests may show various degrees of sensitivity to many allergens in this group. However, testing for sensitivity is the basis for specific therapy, and allergists report good results with hyposensitization treatment in a fair percentage of cases. Diagnosis and case management for these patients is not within the province of the industrial physician and should be the responsibility of the allergist.

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Why Businessmen Have Coronaries

WHY is there such a high coronary rate among industrial executives nowadays? Perhaps the following excerpts from testimony given by William J. Grede, president of the National Association of Manufacturers before the Senate Banking Committee provide the answer. Speaking in favor of letting the Defense Production Act expire to bring about restoration of a "free market," Mr. Grede used this expressive language: "Even when prices are below ceiling, which many are, the O.P.S. compliance problem remains. The grind of administrative machinery is still there; the interpretative work of legal counsel is still there; the labors of great corps of accountants and clerks are still there; the time consuming job of analyzing regulations and making reports is still there; the particular situation of customers and suppliers is still there; prospects of new regulations with another new wave of interpretations, analyses, computations, surveys, studies, investigations, determinations, reports, protests and appeals are still there. These are the difficulties that are tangible, physical and measurable. As they boil and flame in the mind of management, their fusion creates a new substance which is psychological. Its effect is poisonous. It may be described as American psychology thrown into reverse. Confidence is turned into doubt; courage becomes fear, resourcefulness is replaced by caution; planning is turned into waiting; the taking of normal business risks gives way to a drawing-in of all commitments; the sense of freedom is thwarted by a feeling of imprisonment. The dynamic motivation which is the very essence of business progress is stifled."

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Some Neurosurgical Aspects of the Treatment of Pain

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With the advance of our knowledge of neuroanatomy, neurophysiology, and technical progress in neurosurgery, it is now possible, in many instances, to interrupt pain pathways so that pain may be relieved where the primary disorder is beyond our present methods of treatment. Ever increasing numbers of patients are now being sent to neurosurgeons for the relief of intractable pain. Many procedures done in the past have been unsatisfactory or have acquired "bad names," owing to ill-advised operations or operations done without a correct etiological cause for the pain having been established. Before pain is treated by operation, it is essential that a definite diagnosis be made which can mechanically explain the distress. If this cannot be done, the possibility of obtaining a good result diminishes considerably. It is essential to understand the anatomy of the nervous system in order to place the origin of the pain in the proper location and to understand its radiations and pathways. Diagnoses which rest on the terms neuritis, adhesions, "painful scars," osteoarthritis, and trauma should be viewed with suspicion. These do not mechanically explain pain, and generally a more satisfactory diagnosis should be reached before attempting surgery.

It is essential to evaluate the patient's psychiatric background. Pain appreciation has great variation for a given stimulus. It is common knowledge that when pain is anticipated it is much more severe and incapacitating than when it occurs under stress when it is often ignored. It is also well known that the disagreeable sensation of pain and the psychic suffering vary considerably in intensity, being especially prominent during darkness. Nightfall seems to require a great deal more narcotics and sedation for control than an equivalent pain in the daytime. The length of time which the pain has been present and the fear the patient has concerning the future are important factors which must be evaluated. In these days of insurance and compensation, pain is a convenient excuse for failure to return to normal, and these factors must be seriously considered when operations for pain are suggested. The aged present a great problem for the physician trying to interpret pain. With increasing age and senility, many discomforts are interpreted as pain which, I am convinced, are not, and the aged are particularly resistant to treatment of painful lesions by surgery. If there is any doubt about the psychogenic origin of the pain, the patient should be evaluated by a psychiatrist before operations are undertaken rather than afterward when they have failed.

It is essential to obtain some idea of the intensity of the pain. This can be judged roughly by the amount of disability, by its duration, and by the quantity of narcotics or other drugs used to relieve the pain. Blocking nerves with local anesthesia may be helpful in delineating the area of pain and evaluating its intensity. The effect of x-ray therapy, if given, should be evaluated. This therapy frequently relieves a painful condition, but if it has been resistant or has recurred despite the x-ray therapy, one may get some idea of its intensity. Before undertaking operations for pain, the patient must thoroughly understand the phenomenon of numbness, if this is going to be present postoperatively. While numbness is the absence of sensation, it is a disagreeable feeling to many people, and not infrequently patients will complain more bitterly of numbness after the operation than they did of the pain preceding it. The phenomena of paresthesias and regeneration should also be thoroughly discussed with the patient before undertaking a peripheral nerve section where regeneration is possible. Again the symptoms may be more disagreeable than the original discomfort.

When undertaking operations for pain, areas denervated should be large. It is rare that a sizable portion of the body is supplied by one nerve or one root. There is tremendous overlap, and it is essential that all pain fibers to an area be severed. This is particularly true in cases of cancer. When attempting to relieve pain resulting from this disorder, it is important that the operation be radical. If not, the carcinomatous process will soon extend beyond the region that has been rendered pain-free. It is essential in operations for pain that all pain-conducting fibers be severed, as patients do not appreciate partial reduction of pain and they will not feel satisfied unless all discomfort has been removed. It is surprising how a few intact pain fibers will often produce as much distress as may emanate from a normally ennervated area. It should also be kept clearly in mind that the patient is unable to appreciate more than one pain at a time. If lesions are present that suggest that two or three separate areas may be painful, it is important to explain this before operation, should all the areas not be denervated at the same time. This is particularly true of cancer where the patient complains of pain in one extremity. Frequently after the pain has been relieved in one extremity, it will appear on the opposite side simply because the one pain was

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more prominent than the other and the lesser pain had been excluded from the center of consciousness until the stronger pain had been relieved. Further procedures may then be necessary.

It is doubtful whether procaine injections have ever cured a mechanical cause of pain. Where patients have been relieved permanently by procaine injections, it is my feeling that these discomforts were psychogenic in origin. However, procaine injections have an important place in diagnosis. Such blocks may be extremely helpful in determining which of several nerves are involved as well as pointing out to the operator that, when the pain is not relieved, the problem is probably central in origin rather than peripheral.

It is my own feeling that alcohol injections have little place in the treatment of pain. First, the injections are rarely precise and often cannot be placed where desired. Second, they are usually only suitable for peripheral nerves. Here the problem of regeneration makes repeated injections necessary and often unsatisfactory. Besides these difficulties, there is the problem of alcoholic neuritis. Unless the nerve is killed entirely, the distress following the injection is more severe than the original pain. Finally, it is with great difficulty that operations are carried out in the regions in which alcohol has previously been injected. It is my feeling that today the risk of surgery is small and the precision so great that alcohol injections should be reserved for the rare and exceptional case.

There are now several operations available for the relief of pain. These are performed at various stages of the pain pathways from the periphery to the cerebral cortex. The simplest is peripheral neurectomy. This procedure is generally not very satisfactory and has limited usefulness, since it is unusual that one can denervate a large area by sectioning one nerve. This then leads to multiple or extensive operations to cut several nerves. The resulting numbness is profound. Ordinarily, it is rare that the nerve is purely sensory, and frequently the accompanying motor loss is disabling. Finally, one has the problem of regeneration which occurs in all nerves. With the regeneration of the nerves, the pain will recur. When all these factors are taken into consideration, it is felt that peripheral neurectomy has a limited place in the treatment of pain and should be used with circumspection.

A second method available is rhizotomy. The section of individual posterior roots frequently denervates a surprisingly small area, and the operation may become extensive in order to get sufficient anesthesia to denervate a sufficiently large area. It is impossible to cut the posterior roots to an arm or leg without producing incapacitating neurological deficits, so that one is limited to treating pain in the chest and abdomen by this method. Again, this procedure, while permanent and sometimes adequate, should be utilized only on special occasions.

Sympathectomies are not infrequently beneficial in the treatment of pain, particularly of the viscera. They are also exceedingly helpful in controlling pain due to vascular insufficiency. Here pain is relieved by two mechanisms: (1) increasing blood supply to the affected part, and (2) sectioning the sensory fibers that accompany the sympathetic fibers.

Chordotomy is one of the procedures of choice. A chordotomy incision either in the upper thoracic or upper cervical regions will anesthetize large areas of the body, leaving motor power intact and not interfering with the sensations of position and touch. Patients do not complain of numbness. Operations of this type require considerable training and should not be undertaken by those not thoroughly familiar with the anatomy of the spinal cord. Bilateral sections can be done. It is best to do them about 10 days apart to avoid bladder difficulties. However, they may be done simultaneously, and frequently cause no difficulty.

Tractotomy either in the medulla or the midbrain has been done. Generally these procedures have a rather limited usefulness, owing to the extensive operative procedure necessary in order to section the pain tracts.

Areas of the sensory cerebral cortex have been removed on certain occasions. This operation has not been very satisfactory and is not recommended except for certain types of phantom limb.

Finally there is pre-frontal lobotomy, where the control of pain is not by the section of pain fibers but by divorcing the ability to appreciate pain from the rest of the mental functions. This procedure is excellent where suffering and mental anguish are important symptoms. The bad feature of the operation is the extensive mental deficit which results. This is not true in unilateral lobotomies or partial resections of the frontal lobes. These latter procedures leave much to be desired, however, as the relief is frequently neither complete nor permanent. Lobotomy is an extremely useful tool in advanced cases of intractable disease, and the results have often been gratifying. The surgical risk is low even in debilitated patients.

The painful disorders which are most satisfactorily treated by surgery are: tic douloureux and glossopharyngeal neuralgia; pain arising from chronic localized disease or injury which involves bones, joints, peripheral nerves, etc; diseases involving chronic vascular insufficiency (extremities or viscera); cancer (carcinoma of the prostate and cervix are particularly amenable to relief of symptoms by chordotomy), and various visceral and vascular disorders such as angina, chronic pancreatitis, Raynaud's disease, and others in which sections of the sympathetic nerves are favorable both for increasing blood supply and producing anesthesia.

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Certain disorders are not amenable to surgical treatment. These include neuromas resulting in amputations, most cases of phantom limb, atypical facial neuralgias, posthepatic neuralgias; ill defined pains which are often psychogenic in origin. These disorders probably have their locus in the cerebral cortex, therefore, peripheral sections will result in failure. It has been the treatment of these disorders by surgery that have cast suspicion on the value of certain procedures for the control of "organic" pain.

CONCLUSIONS: There are many chronic painful diseases which our present-day therapy is unable to cure. Relief of symptomatic pain, however, may be accomplished by severing the pain fibers supplying the diseased area. Some of the disorders which are favorable to such operations have been enumerated. There are many disorders which are predominately psychogenic in nature, but in which "pain" is localized in various parts of the body. These are not amenable to surgical procedures carried out on peripheral nerves or the spinal cord.

Pre-frontal lobotomy is a drastic procedure which attacks pain at the level of attention. It is excellent where suffering is an important symptom or the pathological process is widespread. It is also suitable for the treatment of psychogenic "pain," but owing to the undesirable side effects, it should be used rarely and with great discrimination.

"Softened, Bent, and Guided"

I WAS talking with a friend of mine and he said, "Did you ever read the last chapter of De Tocqueville's Democracy in America?" I had read some of it but I never got to the last chapter. I went back to the book and found the most amazing prediction of what is threatening us today. De Tocqueville was a young French nobleman who came over to this country in the 1830's, 120 years ago, and after looking us all over and examining democracy in its operation in this country, he wrote some words that I think ought to be imbedded in the consciousness of every American because they represent the threat that faces us today. He said in the first place that this country never needs to fear a tyrant but it needs to fear a guardian. Here is what he said, and he is talking about government: "I see a happy race of men. Above this happy race of men stands an immense and tutelary power which takes it upon itself alone to watch over their fate. That power is absolute, minute, regular, provident and mild. It would be like the authority of a parent if like that authority its object was to prepare men for manhood; but it seeks, on the contrary, to keep them in perpetual childhood. It is well content that the people should rejoice, provided they think of nothing but rejoicing for their happiness. Such a government willingly labors, but it chooses to be the sole agent and the only arbiter for that happiness. It provides for their security, sees and supplies their necessities.... facilitates their pleasures, manages their principal concerns, directs their industries, regulates the descent of property, subdivides their inheritances, and what remains is but to spare them all the care of thinking and all the trouble of living. After having thus successfully taken each member of the community in its powerful grasp and fashioned him at will, the supreme power then extends its arm over the whole community. It covers the surface of society with a network of small, complicated rules, minute and uniform, through which the more original minds and the more energetic characters cannot penetrate to rise above the crowd. The will of man is not shattered, but softened, bent and guided. Men are seldom forced to act, but they are constantly restrained from acting. Such a power does not destroy, it prevents existence; it does not tyrannize but it compresses, extinguishes and stupefies a people till each nation is reduced to nothing better than a flock of timid and industrious animals of which the government is the chaplain." That is what a man 120 years ago warned us about and that is the threat which faces us today. That is the Welfare State.

—From "How to Keep Our Liberty," by RAYMOND MOLEY, quoted from *Newsweek* in *Nebraska State Med. J.*, July, 1952.

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INDUSTRIAL MEDICAL ASSOCIATION

The President's Page

SEVERAL months ago on this page, I outlined the objectives of the Industrial Medical Association for the coming year. These, as you may remember, included expansion of membership, recognition by the American Board of Occupational Medicine, greater understanding and cooperation among local medical societies, greater realization by management of the importance of industrial medicine, and increased emphasis in America's medical schools on industrial medical training.

It goes almost without saying, that the success of all of these objectives is largely contingent on the success of the first, i.e., increased membership. Without growth it will be difficult, if not altogether impossible, to achieve our program. Only a larger organization can bring us the increased recognition and the increased capacity for action which are indispensable to its realization.

I stated in a previous issue that our goal for new membership should be about 1,000. Since that time, I have received many comments from members—the majority of them agreeing with me that this is a wise and a practical goal.

Anyone who feels that we are being too ambitious in trying for 1,000 new members may be interested in these facts. We have, at the present time, approximately 2,400 members—including Fellows, Active, Associate, Honorary, Inactive and Retired Members. The distribution of this membership is as follows:

I.M.A. (direct)	776	Philadelphia	100
Central States	474	New Jersey	81
Western Ass'n.	233	Florida	51
New York	169	Hawaii	41
New England	163	Kansas City	38
Michigan	154	Mine Physicians	20

A review of our membership in the various sections of the country reveals that the number of members in the larger industrial areas such as New York, Pittsburgh, Cleveland, Cincinnati, Detroit, Chicago, St. Louis, New Orleans, Houston, and Dallas is relatively small. And in the Pacific Northwest—where industry is really thriving—we have only a small group. The South and the Southwest, where new industry is growing rapidly, are similarly down in I.M.A. membership.

During particularly the last few years the development of new industries and the growth and expansion of existing ones have been proceeding at an accelerating rate. One result of this is the rapidly enlarging number of medical services for employees. There are so many of these as to make the estimate a reasonable one that, in America today, there are at least 2,500 full-time Industrial Physicians, and more than 10,000 part-time Industrial Physicians, with many more thousands of physicians practicing industrial medicine on a fee basis. In other words, there now are well over 10,000 physicians who are eligible for membership in the INDUSTRIAL MEDICAL ASSOCIATION.

I AM SURE you will agree with me, then, that 1,000 is a relatively modest goal for our new membership drive. But it nonetheless calls for the wholehearted cooperation of every member.

I would like you, therefore, to do these three simple things:

1. Bring to mind one physician whom you know to be eligible for I.M.A. membership and whom you would like to have as a member.
2. Contact him either in person or by phone and tell him that you would like to recommend him for I.M.A. membership—informing him that this is the one organization that represents his field of medical endeavor and emphasizing that no obligation is incurred.
3. Remove the appropriate card (see the insert following this page), fill in the necessary data, and enclose it to your District Counselor, whose name and address will be found on the back of the card.

Your District Counselor, working with the main office and the component societies, will then do the remainder of the work in bringing the physician you recommend into the organization. But it will be impossible for us to begin at all, unless you cooperate in this one small regard.

If you should have more than one physician in mind whom you know to be eligible, and would like extra cards, these may be secured from the Managing Director's Office, 28 East Jackson Boulevard, Chicago 4.

Remember—10 minutes of your time *now* can mean the eventual achievement of all of our goals for the year! This is *your* chance to serve your Association.

E. A. Irvin, M.D.

Date_____

I wish to recommend a physician* for membership in the INDUSTRIAL MEDICAL ASSOCIATION. I (have) (have not) discussed this application with him.

Signed_____

Address_____

*Name_____

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ASSOCIATION NEWS

FELLOWS of the Association who desire to replace their American Association of Industrial Physicians and Surgeons certificates with certificates bearing the new name INDUSTRIAL MEDICAL ASSOCIATION may secure such new certificates by writing the Managing Director. For those who wish to retain their old certificates but would like to bring them up to date with a clarifying addition, we have a small sticker to attach to the certificate reading "INDUSTRIAL MEDICAL ASSCCIATION since April 26, 1951."

ALLEN M. COLLINSWORTH, M.D., I.M.A. Counsellor for District 6, was recently re-elected, for the second successive year, as Secretary of the Georgia Industrial Surgeons Association, and was appointed chairman of the Committee on Industrial Health and the Committee on Legislation of the Medical Association of Georgia. In addition, it has been his entire responsibility to supervise the proofreading on the revised industrial fee schedule for the state.

M. G. WOOLFF, M.D., General Motors South African Limited, Kempston Road, Port Elizabeth, S.A., who spoke briefly at the Annual Banquet in Cincinnati, writes as follows under date of July 7: "In reviewing our tour, which involved several of the states of America, much of England, and some part of the Continent, I can think of no more pleasant days than those we spent with you in Cincinnati. We returned to South Africa a few days ago to find your letter of April 29 awaiting us. Many thanks for it and the kind things you say therein. As Chairman of the next meeting of the Society of Industrial Health of South Africa, which will be held in Johannesburg September 22 to 27, this year, it gives me great pleasure to convey an invitation from our Committee to any member of your Association who may be in this country, to attend this Conference. I should be happy to furnish details if communicated with at this address. I wish again to thank you and many other members of your Association and their ladies for the warmth of the welcome they extended to myself and my wife, and for the great kindness and unbounded hospitality which we received."

BOOKS

Geo-medicine

GLOBAL EPIDEMIOLOGY: A Geography of Disease and Sanitation; Volume Two; Africa and the Adjacent Islands: by J. S. SIMMONS, T. F. WHAYNE, G. W. ANDERSON, H. M. HORACK, and R. A. THOMAS and Collaborators. J. B. Lippincott Co., Philadelphia, 1951, $15.00.

AN EXCURSION into the unexplored field of geomedicine, bringing together in one place certain data on medical health and sanitary conditions of various geographic areas of the world." This second volume of a reference work on medical geography appears seven years after the publication of the first volume which contained material on Asia and the Pacific Islands. These books are based on information collected by medical intelligence workers for the Army during the recent war. The present volume has been brought up to date by a recent trip through Africa by one of the authors. Apparently, the delay in publishing this volume was largely due to dispersal of the original staff.

"The health and standards of living of the inhabitants of West Africa, for example, are no longer of purely local concern but affect directly or indirectly the lives and the economic well-being of other peoples, not alone in adjacent portions of the continent but throughout the world." Industrial firms importing materials from Africa would do well to heed this comment. They will find here considerable information on which to base an opinion as to the possibility of occupational illness which might be introduced thereby. Each political unit on the continent is dealt with separately. Besides information on the prevalent diseases and health and medical facilities of the country, each section contains summaries of pertinent material on geography, climate, population, socio-economic conditions and the local flora and fauna. A number of spotmaps of disease distribution are used to amplify the text.

Even a cursory perusal of the section on Liberia, for example, will show the difficulties to be encountered by industrial firms attempting to establish projects of their own on this continent. The Firestone interests have been working in this particular country for a number of years.

"After the war, the completion of the remaining volumes of this series, as a peace-time project, was made possible through grants from the United States Public Health Service to the School of Public Health of the University of Minnesota." The volumes on South America and Asia Minor, if and when they appear, will no doubt be of even greater use and interest to Americans and Europeans, owing to the extensive economic relationships which exist between these areas. —ROBT. HORTON

All About Pesticides

PESTICIDE HANDBOOK: D. E. H. FREAR, PH.D. College Science Publishers, State College, Pennsylvania, 1952, pp 176, $1.25.

THIS is a mighty handy little book. It describes itself as "a comprehensive guide and index to trade names, active ingredients, uses and manufacturers of commercial insecticides, fungicides, herbicides, rodenticides, and pesticide equipment sold in United States and Canada." That factual description may leave the industrial physician unmoved, but it shouldn't. Perhaps already he knows that the fruit in all its lusciousness on his breakfast table is there by the grace of insecticides. No insecticides and he would have no fruit, or maybe just wormy nubbins. Less likely is he to know that a myriad of insecticides are toxic to man as the applier as well as to insects. Some of the most toxic chemicals of all time are to be found in recently created insecticides. Some pesticides (not all are toxic), whether applied as part of the work task or by the worker in his personal pursuits apart from employment, are common sources of disturbing affections, with contact dermatitis and allergic manifestations dominating.

Only a few decades ago the widely used pesticides

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were only about 10 in number. Now comes this book with a listing of 4360. That 4360th one is "Z.I.P., zinc dithio carbamate amine complex 30%, polyethylene polysulfide 10%-ANR-Innis." Now you see just how complex the chemistry of pesticides has become.

Why is this book valuable? Mostly pesticides are bought, sold and applied under some fancy trade name. A full disclosure of contents seldom is available. But this book tells all. You can't borrow my copy. It's too valuable. Get your own. Low priced, too.

Methods in Medicine

METHODS IN MEDICINE: THE MANUAL OF THE MEDICAL SERVICE OF GEORGE DOCK, M.D. By GEORGE R. HERRMANN, M.D., PH.D., Professor of Medicine, University of Texas Medical Branch at Galveston. Second Edition, Completely Revised. The C. V. Mosby Co., St. Louis, pp. 488, $7.50.

"COMPACT" is the word for this book. Page by page, it scarcely wastes a word in going about the business of affording terse instruction in the methods of medicine,—what to do to reach exact diagnoses. Sixteen early pages captioned "Working Outline Table of Contents," (not table of contents), alone are worthy of publication. In ensuing chapters the author expands this outline in such full and direct manner that any physician may be steered to thoroughness. The approach to the presentation may be indicated by mention of two or three headings picked at random: "Special Studies to be Undertaken in Patients with Metabolic Disorders"; "Special Studies in Patients with Allergies"; "Management and Treatment in Emergency Situations."

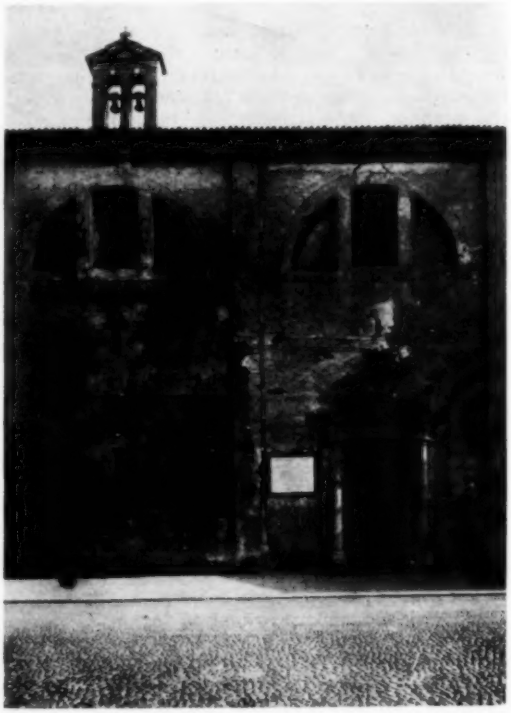
A unique item but not a unique feature of this book is the reference to Dr. George Dock's "20 drugs." Back in 1899 Dock listed 20 substances as the bed rock of drug therapy. His astuteness and foresight were remarkable, for now 50 years later, those same drugs are still basic, while hundreds of others have been discarded. Augmentation has arrived only in such developments as insulin, penicillin and other antibiotics, the sulfonamides and kindred wholly new agents. These 20 drugs are: (1) Opium. (2) Arsenic. (3) Iodides and iodine. (4) Iron. (5) Quinine. (6) Digitalis. (7) Strychnia. (8) Salicylates. (9) Atropin. (10) Bromides. (11) Chloral, veronal, or trional. (12) Ammonium chloride, balsams. (13) Phenacetin. (14) Calomel, sodium sulfate, castor oil, cascara. (15) Bismuth. (16) Nitrites. (17) Acid hydrochloric; alkali, sodium bicarbonate. (18) Ipecac. (19) Male fern, santonin, thymol, or chenopodium. (20) Sera, vaccines, opotherapy, thyroxin, etc.

Any hard-bitten book reviewer always is impelled to prove he has read the book and not merely thumbed the chapter headings. The vehicle best serving this objective is the disclosure of trifling errors chargeable to proofreaders. Travelling in that vehicle, there is noted on page 93 that the word "diet" provides confusion when perchance the word "dye" was intended. On page 141 "seen" appears for "soon."

Now having indulged in this little soul satisfying iniquity, but admitting the unworthiness of such fly-specking,—back to the important. This is a commanding book. It provides more than could be expected.

LETTERS

TO THE EDITOR: We have taken a picture of the Church of the Blessed Heaven where Bernardino Ramazzini was buried, and we are sending you a copy. The Church is in Padova on Via Gian Battista Belzoni Street, and the wall that you see has set in it the gravestone which was originally inside, but after the destruction and dispersion of the bones, through the care of the Faculty of Medicine of the University of Padova, it was set on the outside wall in 1933.



The date of the birth of Ramazzini was the 5th of November, 1633, and it coincides with that of his death on the 5th of November, 1714. There is no error in this strange coincidence; in fact, he was, on that day, completing his 81st year. There can be no error because of the change of calendar, because the Gregorian calendar had substituted the Giuliano calendar in Italy since 1582, while in England the change did not occur until late in 1751 (and in Greece in 1923).

—PROF. GUSTAVO TANFANI,
Professor of the History of Medicine
University of Padua
Padova, Italy.

TO THE EDITOR: In the July, 1952, issue of *Industrial Medicine and Surgery*, in the "Personal" column, my name was mentioned. I wish to state that I am *not* connected with the Ortho Research Foundation in any capacity, and would appreciate your making note of this in your Journal.

—NATHAN MILLMAN, M.D.

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"Improved Human Relations Urged in Metal Plants"

UNDER the above caption, and a Geneva place line, the *I.L.O. News* (June, 1952) prints as its lead article, here reproduced only in part, the following: "A blueprint for better 'human relations' in the world's metal industries as a means to increased productivity and a more contented personnel was planned at the fourth session of the International Labour Organization's Metal Trades Committee held recently in Geneva. The meeting was attended by government, employer and worker delegates from 19 countries. The Committee declared that 'all workers should be treated not simply as factors in production, but as human beings whose dignity and freedom, within the framework of their rights and duties, should be respected under all circumstances .... A reciprocal spirit of cordial cooperation between top management, the supervisors, and workers of an undertaking is an essential factor in creating a better human atmosphere, improving conditions of work and the well-being of all those employed in it, ensuring its good running and increasing its production and prosperity in the general interest."

Devoutly, any and all may sponsor any laudable enterprise directed to improved human relations. Clearly the opportunity exists. But, why single out metal plants? Do such workers in some industrial nations represent an especially downtrodden group, shorn of all dignity and freedom, as is possibly implied in the above quotation? It could be true that in some industrial countries metal workers are accorded only low stature in industrial pursuits. This is not true in the United States. Here metal workers stand out as recipients of favored work conditions, rates of pay, and hours of labor. By and large the metal trade industries maintain superior medical, hygienic and safety services. Should metal workers be segregated as apart from industrial workers? In general, such segregation properly would represent superior rather than average work environments.

By all means, let's have bettered human relations in the metal trades throughout the world, but why not for all workers? This conclusion appears to have been the second thought within the cited article, for the final paragraph reads: "The Committee asked the Governing Body to examine the possibility of putting the question of human relations in industry generally for discussion at an early session of the International Labour Conference."

European Institutes

THROUGHOUT industrial Europe are numerous semi-official institutes of occupational health operating under various names appropriate to the several countries. As a rule these institutes are housed in munificent buildings equipped with all modern facilities and staffed by outstanding personnel. Annual reports from these institutes are indeed impressive. The latest is from Finland. This is in Finnish, but a resume appears in English, two paragraphs of which are quoted:

"The Occupational Medical Foundation was established in 1945 for the purpose of 'supporting the research of the questions of occupational diseases, industrial accidents and hygiene, vocational guidance and other questions of occupational health.' From the 15 members of the

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Board the State Cabinet appoints eight. Others are appointed by the Central Organization of the Employers (two), the Confederation of Finnish Trade Unions (two), the Central Organization of the Insurance Companies (one), the City of Helsinki (one), and the Association for Preventing Accidents (one). The Foundation has during the years 1945-51 given 77 scholarships, created the library of the field, and procured a rich research equipment. From the donations received by the Foundation 93.5% comes from the employers, 4.7% from workers and 1.8% from insurance companies.

"The opening celebration of the Institute of Occupational Health took place on May 26, 1951. The costs of the institute and its equipment have been about 300 million Fmk. The functions of the institute are: (1) to examine and develop methods to safeguard and to improve the health of workers; (2) to make, on request of authorities and private persons, occupational health surveys in plants, as well as other investigations in the field of occupational hygiene and medicine; (3) to assist, as occupational hygiene experts, the governmental and communal authorities and institutions working for the improvement of the health of employees; (4) to confer, by request, with physicians, technical officials and social workers, trade unionists, and other persons on questions connected with social medicine and occupational health; (5) to serve as a diagnostic and clinical center for occupational diseases; (6) to operate, by agreement, as a health center in Helsinki for small plants, state institutions, vocational and other schools and institutes to the extent that research and information are required; (7) to arrange courses in occupational health and social medicine."

Other portions of this English summary indicate studies under way including sick absenteeism, cost of medical services, cobalt dermatitis, chronic carbon monoxide poisoning, water and mineral balance under work stress, physiology of lumbering work, pulmonary function tests, heating regulation, merit rating systems, personality tests, traffic accident studies, dexterity tests, etc. The number and quality of published titles covering all such work since the beginning in 1945 are inspiring.

AT ONCE, such reports lead to self inquiry as to why in the United States such institutes are not maintained. The answer is that they are. Not quite the same, not similarly organized, perhaps not so large under any one roof, but in the aggregate more, and hopefully better. It is observed that although this Finnish institute is labeled as a joint enterprise between employers, trade unions, insurance companies and government, some 94% of funds are provided by industry. Also, it is recorded that the Rockefeller Foundation provided $50,000 for the purchase of research equipment for this Finnish enterprise. In brief, it appears that in these smaller countries all, or somewhat all, occupational health enterprises are pooled into one unit. Never in this large country could any one unit meet the requirements of the land. But, there are many institutes wholly governmental, wholly within universities, wholly maintained by industry, wholly maintained by insurance companies, wholly maintained by trade unions. The Haskell Laboratory of Industrial Toxicology of the E. I. du Pont de Nemours Company exemplifies an institute established by industry. The Kettering Laboratory identifies occupational health with a great university. The Rehabilitation Center of Liberty Mutual Life Insurance Company of Boston marks the insurance carriers' devotion to this field. Union Health Center of the International Ladies Garment Workers' Union is one of several union enterprises. The National Health Institute of the Public Health Service in Washington with its division of industrial hygiene completes the series.

The United States has no cause to envy the great establishments of other lands. Without either jealousy or abashment, the numerous institutes of the United States rejoice with other countries in their highly esteemed activities in the shared goal of the conservation of the health of workers everywhere.

The Right To Be Free

I HAVE said before now that there are immutable principles which neither the rigors of depression, nor the tricks of inherent powers, nor lost statesmanship, nor wars, nor New Dealers, nor militarists can change. These immutable principles came into the universe along with the shooting stars of which worlds are made, and they have always been and ever will be true. Such are presence of God, the laws of gravitation, and the ceaseless struggle of mankind to be free. Must we condemn unborn generations to fight again and to die for the right to be free?

—HERBERT HOOVER.

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NEWS, COMMENT, OPINION

ONE factor remains as a hazard to workers, despite a quarter century of progress in the practice and teaching of safety on the job. That factor is human carelessness.

—*Milwaukee Journal*, June 22, 1952.

Medical Directors for Defense

REGIONAL offices of the Federal Civil Defense Administration have been authorized to employ full-time medical directors to handle medical civil defense problems arising within regional defense areas. The salary for this position is $10,800 per year.

—*J.A.M.A.*, July 12, 1952.

Autocrats and Accidents

FOREMEN who tend to be "little dictators" increase the accident rate of their workers, a survey indicates. The study was made by Charles W. Nelson, research associate of the University of Chicago industrial relations center, who disclosed the results at a meeting of the American Psychological Association. Nelson studied the five-year accident rate in a plant employing 5,000 workers. He said he found the accident rate in departments under the "autocratic" foremen four or five times greater than in the other groups in the same plant.

—*Cincinnati Brewery Worker*, May 29, 1952.

"But If Not, Not"

AT THE END of the fifteenth and the beginning of the sixteenth centuries, the Cortes, or parliament of Aragon swore fealty to the King of Aragon thus: "We, who are as good as you, swear to you, who are no better than we, to accept you as our king and sovereign lord, provided you observe all our liberties and laws; but if not, not." Of course, the King of Aragon, poor benighted medieval soul, had never heard of the divine right of Presidents.

—BEN RAY REDMAN, in *The Freeman*.

See Page 363

ARE "maladjusted" employees most often absent? (Answer): Yes. DRS. LAWRENCE E. HINKLE, JR. and NORMAN PLUMMER told the 1952 Industrial Health Conference at Cincinnati. Studies of 2,000 telephone operators in New York City showed that "persons who find it difficult to adapt themselves to the stress of everyday living are, as a group, the ones responsible for the major portion of illness and absenteeism in industry." Because individual workers showed the same "pattern of illness" over 20 years, a study of the life history of those most frequently ill was made. "This revealed that childhood hardships, marital difficulties and unusual financial or psychological responsibilities" usually caused the trouble.

—*New York Journal-American*, June 20, 1952.

"Heh?"

IF WORKMEN in a shop can talk while standing a foot apart, it's not likely that machine noises are great enough to impair the worker's hearing, industrial representatives were told Thursday. Dr. H. C. Hardy, of Chicago, a physics researcher for the Armour Research Foundation of the Illinois Institute of Technology, said, however, that a worker's hearing may be permanently damaged if he works in a shop where it is necessary to shout in another's ear to be understood. He spoke at a session of the Fourth Annual Southeast Lakeshore Safety Conference at the West Allis School of Adult and Vocational Education. The one-day conference was sponsored by the West Allis Industrial Safety Council.

—*Milwaukee Sentinel*, May 23, 1952.

Compulsory Medicine by Treaty

INTERNATIONAL Labor Organization, meeting in Geneva, has approved a convention (treaty) on minimum standards of social security in nine fields—*medical care*, sickness benefits, unemployment benefits, old-age benefits, employment injury benefits, family benefits, maternity benefits, invalidity benefits and survivor benefits. Approval came over objections of employer delegations from many countries. The U.S. employer spokesman was quoted as saying employers would be against the entire convention because of the medical care section alone. A government may be listed as ratifying the convention if it promises to meet the requirements in four of the nine fields of social security. The medi-

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Medical Director: (105) Age 36; five years, Medical Officer; past five years, Medical Director, Assistant, important petroleum plant, immediately available.

Medical Director: (106) Age 43; Medical Director, six years, heavy steel fabricating plant; 12,000 employees; past several years, Director, industrial health program, large Pharmaceutical laboratory.

Medical Director: (107) Age 40; M.D. degree, George Washington, Medical; seven years, Medical Officer; past three years, Medical Director; leading southern oil company, available 60 days.

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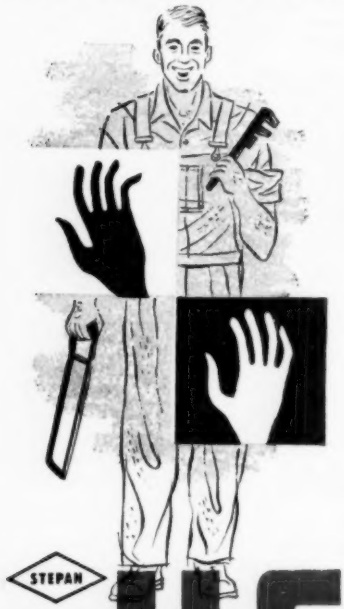

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cal care section stipulates that a country ratifying must provide a system of compulsory health insurance. Lacking this, it has two alternatives: (a) private, voluntary health insurance "administered by public authorities under established regulations" set by law, or (b) private, voluntary health insurance administered by insurance companies but under government "supervision." Coverage would have to average about 50% of the population.

—*A.M.A. Capitol Clinic*, 3:26, July 1, 1952.

Chrysler Study

STRUCTURAL secrets of materials ranging from human blood to shock absorbers are being revealed by Chrysler scientists with the aid of the electron microscope. Studies of blood samples were included in an investigation of the problem of hardening of arteries. The electron device made it possible to see for the first time the size and form of a blood protein molecule so small that it would take about 40,000 to form a single line across the head of a pin. Results of the program initiated by the automobile company's Medical Department added support to a theory that this molecule is associated with certain changes in arteries thought to precede coronary disease.

—*Chicago Tribune*, July 9, 1952.

Federal Hazards

NEARLY 250,000 of the approximately 4,000,000 employees of the Federal government and industrial workers covered by Federal compensation laws, are injured annually—about 1,400 of them fatally—in the performance of their official duties, according to the Department of Labor's Bureau of Employees' Compensation. Annual disbursement of about $40,000,000 is authorized by the Bureau as the cost of these on-the-job accident claims. This figure is based on an analysis of the accidents by establishment, industry, occupation, cause of injury, and a variety of other categories.

—*Labor Information Bull.*, June, 1952.

Labeling

RESOLUTION adopted by the American Conference of Governmental Industrial Hygienists at its Annual Meeting, April 22, 1952, Cincinnati, Ohio: "WHEREAS, the content, dangers and protective measures necessary for the handling of potentially dangerous substances is not limited by geographic areas; and WHEREAS, the appropriate label on such substances can help to preserve and protect the public health; and WHEREAS, the storage, transportation and use of these substances may need specific precautions for the protection of the public; and WHEREAS, in the past the U.S. Public Health Service and the Manufacturing Chemists' Association have cooperated toward this end; NOW, THEREFORE, BE IT RESOLVED, that the American Conference of Governmental Industrial Hygienists approve the following principles: (1) That adequate labels for warning and identification of harmful substances are necessary for the prevention and control of a public health problem; (2) That requirements for adequate warning labels should be as uniform as possible; and (3) That the American Conference of Governmental Industrial Hygienists work together with other official and non-official groups as well as with the Manufacturing Chemists' Association toward the development of an adequate uniform guide for the labeling of potentially harmful substances; AND BE IT FURTHER RESOLVED, that the Executive Committee assign to the Chairman of one or more appropriate standing committees the responsibility for immediate action to implement these principles; AND BE IT FURTHER RESOLVED, that the Secretary of the Conference be instructed to distribute copies of this resolution to the members of the Conference and other interested parties."

Aluminosis

AUTHOR examined 97 workers employed at an aluminum smelting plant. Of 36, which were obviously occupied with smelting, three had a serious pulmonary cirrhosis, one a beginning fibrosis and eight milder involvement of the lungs. In discrepancy with silicosis, the x-ray picture shows less severe alterations as should be expected considering the serious clinical pictures. The main symptom is dyspnea and chronic bronchitis. If death occurs, it is generally due to acute breathing insufficiency. Few deaths due to spontaneous pneumothorax also have been reported; however, only very few combinations with tuberculosis and no case of cor

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pulmonale. (H. Modder and T. Schmitt. *Deutsche med. Wchnschr.*, 3:84, 1951.)

—*Clinical Medicine*, June, 1952.

Fifth Gulf Coast

THE FIFTH Annual Gulf Coast Regional Conference on Industrial Health will begin on the afternoon of September 24 in Houston, Texas, and will highlight the transportation industry as its principal theme. The evening of September 24 will be devoted to a Symposium, "Alcoholism as a Problem in Industry." The program for September 27 will consist of topics relating to Industrial Nursing. Concurrent sessions on Industrial Wastes will again be held.

Salaries

THE Industrial Nurse Section of the Connecticut State Nurses Association has issued recommended minimum standards of employment for industrial nurses, in response to the indicated need for uniformity in the establishment of job classifications and pay scales for nursing personnel. The full salary recommendations of beginning minimum salary ranges are: Industrial Staff Nurse, $2,860-$3,380; Industrial Charge Nurse and Industrial Visiting Nurse, $3,900-$4,420; and Industrial Nursing Supervisor, $4,420-$4,940. Overtime pay beyond 40 hours and salary increases are requested in accordance with company policy along with holiday and vacation pay and sick leaves. Night shift differentials are recommended in accordance with plant policy for other employees. The recommendations also ask for salary guarantees for periods of work stoppage, such as inclement weather, lay off due to material shortage, or other similar factors which are beyond the control of the individual.

—*Meriden Journal*, June 25, 1952.

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Rehabilitation

A REHABILITATION center for those injured in industry will be opened at Ohio State University in September as a part of the university's health center. The Legislature last year appropriated $300,000 to carry the center for the first two years. There will be a screening panel to decide who needs and can profit by the rehabilitation service. The center is expected eventually to cut the amount of workmen's compensation paid out. This would be done by making an injured workman capable of returning to his job or training him for another at which he can support himself. Dr. Ralph E.

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Worden, in charge of physical medicine at Childrens' and University hospitals, will direct the new unit. Kenneth Hamilton, assistant professor in the School of Social Administration at OSU, will direct rehabilitation services.
—*Columbus Citizen*, June 23, 1952.

"Spend and Spend"

RECOMMENDATIONS to the President's Commission on the Health Needs of the Nation: *Industrial Health*—More uniform workmen's compensation laws are needed, as well as more research and training in social, occupational, and environmental medicine and hygiene. *Environmental Health*—Federal grants, research, and information should be extended to assure state and local improvement of environmental health services. *Health of the Aging*—Economic status of most older people is such that "adequate medical care can be provided them only through substantial use of public funds."
—*A.M.A. Capitol Clinic*, 3:28, July 15, 1952.

Freedom?

RECENTLY, Frank Hamilton, an Indianapolis school teacher, returned from England where he had been an exchange teacher under the Fullbright Act. Hamilton didn't like what he saw of British socialism. He expressed himself verbally and in writing. It's reported in the newspapers that he received a warning from the F.S.A. Office of Education that he had better cease and desist as the British might not like it and might refuse to cooperate in the teachers' exchange program. What right have the F.S.A. boys to tell any U.S. school teacher (anyone else in fact) that he can't tell the wide, wide world anything he wants to about British socialism or any other brand of socialism, communism, or what have you? Obviously, no right. But that's the fix we're in today. Remember a few years ago when health officers received a veiled warning from Washington that they should keep their mouths shut on the Wagner-Murray socialized medicine bill (unless, of course, they wanted to put in a plug for it) or maybe find themselves minus some Federal handouts? Well, times haven't changed (if they have, they're worse).
—*Ohio State Med. J.*, quoted in *Pennsylvania Med. J.*, June, 1952.

Noise Study

A TWO-YEAR study of excessive industrial noises and their effect on the hearing of workers has been started by the Illinois Department of Labor. Representatives of 13 industries have already taken part in preliminary discussions. Emphasis will be placed on industries where there are noises of unusual intensity or quality in certain departments. Effects of such noises and means of minimizing or eliminating them will be studied. Working with the Department in carrying out the study are: Western Electric Company, Laclede Steel Company, Olin Industries, General Steel Castings, Lumbermen's Mutual Casualty Co., Caterpillar Tractor Company, Deere and Company, American Brake Shoe Company, Allis-Chalmers Corp., Crane Company, International Harvester Company, General Motors Corporation, and American Can Company.
—*Illinois Labor Bulletin*, May-June, 1952.

No Such Fund

PUBLIC officials have been careless with the truth in championing many of the tenets of socialism, always giving the idea to the people that the government is furnishing many services free: free medicine, free hospitalization, free pensions. The truth is that the government cannot give

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anything to anyone which it has not first removed from him by taxes, either visible or hidden. When the F.S.A. Administrator states that free hospitalization for the recipient of social security will not cost anything because there already is a security fund accumulated from contributions over the years, out of which the hospital bills can be paid without further taxation, he is not telling the truth, first, because free hospitalization would run up a bill into millions, perhaps billions, of dollars, and, second, because there is no such security fund. Social security payments have been used by the Federal government as they come in, going into the general fund for administrative purposes. When the old age pensions of millions of people begin to come due, as they will increasingly within a few years, American taxpayers will wake up to an unpleasant surprise. There will be no fund from which to draw. How will the old people be paid? The answer is simple: more taxes will have to be levied to pay the social security benefits, which, like the Old Gold prize fund on the radio, will grow and grow and grow.

—From "Full Speed Whither?" by ALLEN T. STEWART, M.D., in *Texas State J. Med.*, June, 1952.

Columbia Lectures

THE Faculty of Medicine, Columbia University, announces a series of lectures on Occupational Medicine to be given from 9:00 to 10:00 on Saturday mornings beginning September 20, 1952, in Amphitheater A, College of Physicians and Surgeons, 630 West 168th Street, New York 32. The lecturers will be members of the staff of the Division of Occupational Medicine of the School of Public Health. Interested members of the medical and allied professions are invited to attend. There will be no formal registration and no tuition fee. The schedule is as follows: *September 20*—History of Occupational Medicine; *September 27*—Scope, Objectives and Practice of Occupational Medicine; *October 4*—Industrial Toxicology: General Principles; *October 11*—Toxic Metals I; *October 18*—Toxic Metals II; *October 25*—Toxic Solvents I; *November 1*—Toxic Solvents II; *November 8*—Toxic Dusts; *November 15*—Toxic Gases; *November 22*—Occupational Dermatoses and Infections; *November 29*—Ventilation, Lighting, Noise; *December 6*—Elementary Nuclear Physics; Radiation Hazards; *December 13*—Workmen's Compensation.

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—From "The Penalty of Compulsory Retirement," by ROBERT E. FITZGERALD, M.D., in *West Virginia Med. J.*, May, 1952.

Correlation

OBVIOUSLY, when a workman is exposed to a maximal amount of a toxic material and is "knocked out," it is not difficult to associate his exposure at that time with the clinical findings. There is no problem in the diagnosis. More frequently, however, when a workman is exposed to slower acting compounds or minimal doses of lethal compounds over a long period of time, the physician then must assume also the role of detective in order to explain the clinical findings. All the regular laboratory and x-ray facilities plus some of the

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more elaborate laboratory procedures frequently have to be resorted to. A good example recently occurred in a group of painters in one of the domestic plants. These painters were given the usual special periodic physical and laboratory examinations and no evidence of lead toxicity was ever found. However, the clinic physician noted that a few of these painters were making fairly frequent trips to the dispensary with vague complaints. Physical and laboratory examinations were negative. Finally a more complicated, technical laboratory procedure was carried out on the urine; and it was found that these men had an increased amount of lead absorption which if continued would have led to clinical intoxication. When the physician carried out this test on the entire group of painters, he found that it was only the younger ones who showed evidence of lead absorption. Further detecting on his part explained this in that the younger painters, having been more recently employed, were put on the less desirable jobs.

—From "Correlation of the Occupational and Environmental Findings with the Clinical Findings," by R. F. SCHNEIDER, M.D., in *The Medical Bulletin*, Standard Oil Company (New Jersey), 12:2, 207 (April) 1952.

Chocolate

ACCORDING to Prof. Robin Beach of the Robin Beach Engineers Associated, Brooklyn, minute chocolate dusts, as well as many other common dusts, properly mixed with air can be ignited by a spark of static electricity in a manufacturing plant where proper safety precautions have not been followed. Speaking on the General Electric Science Forum from radio station WGY, Professor Beach said "fine dispersions of chocolate in the air are just as flammable and dangerous as chemical vapors or gases, which are a constant safety hazard in many industries."

—*New York Times*, March 27, 1952.

Health Programs in Akron

ALL THE dividends don't come from profits! Ask almost any industrial executive. He'll tell you good health pays off, too. Industry is more convinced of this than ever as it expands its medical programs and attempts to make its workers and officials "health conscious." Hundreds of thousands of dollars are spent every year in the rubber plants alone in keeping an eye on the physical welfare of the employees. In the nation's major factories, the amount expended for medical and health purposes runs well into the millions. Hospitals and dispensaries are maintained and doctors, nurses and others are employed to operate these institutions. But the concern over health doesn't stop there.... Indirectly the welfare of the customer has to be considered. Industrial hygienists look into the toxicity of the materials as well as the manufactured goods to make sure the consumer will not be affected in the use of the products. Industry pushes these efforts with the assumption that nothing is more important to the individual than his health. Obviously without fairly good health, an employee's efficiency, and therefore his value to his employer, will not be up to par. A man's health, though, is his own personal responsibility, points out DR. REX H. WILSON, Medical Director of B. F. Goodrich Co., "We are not offering any socialized medical programs nor is the company in the business of practicing medicine," he adds. "Ours is mainly a preventive and advisory job".... Many firms are finding their medical departments one of the best places to practice what has been of growing concern to industry in recent years—"human relations." Primarily the departments were established to give physical examinations to newly-hired workers, to care for occupational illness and injuries, and to provide first aid. "Our department," explains DR. WILSON, "also is available to an employee for the discussion of his personal medical matters, whether they concern the individual or his family. In this we take the role of a 'father-confessor.' Nothing is more important to the employee than his own personal problems. He wants to be able to consult with some one. While we don't treat him, we do advise him and try to make sure he is on the right track".... The medical department in a big company is one of the busiest places in the plant. DR. W. L. HOGUE, JR., Chief of the Medical Staff of Firestone Tire & Rubber, estimates that between 60,000 and 70,000 persons contact medical staff members during a year. Their calls range from treatments for sore throats, first aid for an injury, to physical examinations for new employees and medical conferences. Relatively new in industrial medical pro-

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grams is emphasis on periodic examinations of top personnel. Usually officers and department heads are included in this group. In some cases, management has made the annual exams compulsory. More than 400 corporations have adopted plans involving some 30,000 executives.... Five out of six firms avoid compulsion. They "strongly recommend." As a result more than 90% of those eligible take advantage of the offer. The employer pays the bills. Akron, Canton & Youngstown Railroad Co. is an example. For nearly 10 years now, the railroad has sent its dozen top executives to Mayo Clinic for a going over. It's not mandatory. However, no one misses. As a rule, companies refer their personnel to clinics or physicians approved by their medical directors for these check-ups. A few are equipped to do the job themselves.... Goodyear Tire & Rubber, a pioneer in the executive health movement, is in the latter group. DR. L. C. HATCH, medical director of Goodyear's plants, supervises the examinations. He explains that the exams are given primarily to augment and support private medical care and treatment. About 40 of Goodyear's officers and top executives are on a "compulsory" list which requires them to appear before doctors each year. There are no exceptions to this rule, including Chairman P. W. Litchfield. The firm also has a general list of about 650 sub-executives who are eligible for check-ups but who are not compelled to take them. Ninety-seven per cent do. The reports of those on the compulsory list are available to the chairman and president on request. Reports on those in the larger group are confidential. Management can see them only with the individual's consent.... B. F. Goodrich inaugurated something different in industrial health programs last year. The firm offered every employee in its Akron plants a "sight screening" test. This is an actual check of the individual's vision while on the job. It is voluntary, and the results are made known only to the employee. If the person's sight is not up to par, he is advised to see an eye specialist for correction. The program will take another year to complete.... Firestone Tire & Rubber not only gives the new employee a thorough physical and dental exam, but those who are absent from work for as long as seven days are interviewed by a company physician before they can come back. The examinations determine if full recovery has been made. They also seek to learn if the employee is capable, in the opinion of the medical department, of continuing the particular work he has been doing. If he isn't, he is assigned to lighter work whenever possible. Firestone's medical staff includes a dentist to handle emergencies and to provide dental advice. Other

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than that, his services are available the same as any other dentist in private practice.... Some of the industrial hospitals are replicas of a modern, big city hospital. Goodyear's, for instance, is equipped for long-term care. About 99% of the company's employees needing hospital treatment select the firm's institution. Under the state law, an injured worker can choose his own hospital. Two full-time and six part-time physicians and 38 nurses operate the firm's big medical department.

—From "Akron Industries Expanding Health Programs," by JOSEPH E. KUEBLER, in *Akron Beacon Journal*, June 22, 1952.

Cancer Case-Finding

C. D. SELBY, of Ann Arbor, Michigan discusses "Physical Examination in Industry as a Cancer, Case-finding Procedure" in the *Rhode Island Medical Journal*, 34:11. DR. SELBY believes the employer-physician relationship gives the industrial physician the opportunity to counsel with a large group of employees to an extent enjoyed by few physicians outside of industrial practice. Through the records which are kept it quickly becomes evident that certain employees are suffering from conditions which require close study and perhaps active treatment by their family physicians. The author believes that industry's contribution through medical routine is good but perhaps not sufficient; and that possibly a plan for tumor detection integrated with routine industrial medical services may be in order. Industrial medicine if not equipped to make all kinds of examinations on both male and female employees in certain instances should be content to act as feeders to the family doctors who may be participating in cancer detection. Industrial medicine departments can be helpful in the promotion of cancer control through health education. Industrial medical examinations being highly specialized, can be used only for the early detection of cancer through incidental findings and from by-products arising during the procedure. Day to day contacts between plant physician and employees often bring out leads which direct the physician's attention to the early detection of malignancies.

—*Connecticut Med. J.*, July, 1952.

Synthetic Sweat

BECAUSE human sweat cannot be standardized, synthetic sweat has been made by an oil company in order to measure the rates of corrosion in different metals from this source. A light fingerprint on a carefully machined piece of metal can damage the part irreparably, in some cases, within 24 hours.

—*New York Times*, quoted in *American Practitioner*, July, 1952.

Congress in Rio

THE Second American Congress of Industrial Medicine will be held in Rio de Janeiro, Brazil, September 20-28, 1952; organized by the Secretary General of the American Union of Industrial Medicine and the Brazilian Section under the auspices of the government of Brazil.

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